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## GRADUATE TRAINING IN NERVOUS AND MENTAL DISEASES*


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Certain standards have long been set up and generally accepted as necessary to be attained before a license to practice medicine should be granted. These standards are ordinarily understood to imply graduation from a recognized medical school, and a successful examination by a board of examiners appointed by the state or national authorities. The fulfilment of these requirements gives the individual the right to practice all branches of medicine, but, as time has gone on and the amount of information available has very greatly increased, medical men have been forced into more or less restricted fields of practice, and even those who denominate themselves general practitioners rarely practice indiscriminately in all branches. In other words, every one tends more or less toward some special aspect of practice, from predilection, or because chance has given him opportunity along certain lines. In either case the result is beneficial to practitioner and patient, in that both profit by a proficiency born of special experience.

### IMPORTANCE OF GRADUATE TRAINING

The development of graduate medical education in the United States is a matter of the utmost importance. The number of men practicing the different specialties has greatly increased in the last few years, and though there has been some improvement in facilities for graduate instruction, these remain, in all except a very few places, poorly organized and administered; but limited use is made of the abundant teaching material really existing, and in few places can students secure satisfactory instruction. As a consequence, much of the special work in medicine is done by men with insufficient preliminary training and with the lack of that clinical experience which alone confers confidence in one's powers of observation and reliance on one's clinical judgment.

### COMPARISON WITH GRADUATE INSTRUCTION IN OTHER FIELDS

An investigation of the faculties of arts, literature and science in any of our better universities reveals the fact that a large proportion of the instructors hold the Ph.D. degree; and if graduate training in the special branches of medicine is to be put on a lasting and acceptable basis, it must at least equal the standards of graduate training in other fields. It is certainly quite as difficult and at least as important to train properly a specialist in medicine as in history, psychology, sociology, physics or chemistry.

Already comprehensive courses have been organized in certain of our medical schools, and there are many indications that the number of these will rapidly increase. Such properly standardized courses, however, must be sharply differentiated from the so-called review courses offered by many of our graduate schools. Though they doubtless served and still serve a good purpose they have certainly failed to develop the great centers of research and teaching which are necessary to provide adequate training for well qualified specialists. Nothing could give more convincing proof of this than the large number of men who felt the necessity of going abroad, up to the time of the great war, for the most satisfactory postgraduate work.

### THE ESSENTIALS OF A PLAN FOR GRADUATE TRAINING

In formulating a plan for such instruction, we should first ask ourselves this question: What is the fundamental object of the training? Its object is to turn out medical men capable, not only of practicing their profession with the greatest benefit to their patients and satisfaction to themselves, but also of advancing the limits of knowledge concerning the specialty they have chosen; for many special practitioners are teachers, and, as Osler has said, every great teacher is an investigator, as is also every great investigator a teacher, though not always to his own associates or even to his own generation.

In our particular line, "training must include an adequate understanding of the nature of nervous and mental diseases, encouragement of sound notions of treating them, and stimulation of efforts to increase knowledge concerning them." Yet, with all this, we must keep within the limits of existing facilities for proper training.

### THE NUMBER OF SPECIALISTS REQUIRED

The number of men who may be needed as specialists in our line is difficult to estimate. Of the Johns Hopkins graduates, since 1912, 6 per cent. are now engaged in nervous and mental diseases; but it must be recalled that special facilities in psychiatry exist in Johns Hopkins and on that account an unusually large number of graduates would enter psychiatric work. Investigations of similar character among the graduates of certain other schools are now in progress, but the results are not yet available.

* Chairman's address, read before the Section on Nervous and Mental Diseases at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

Dr. Bevan estimates that in the United States about 3,000 medical students are graduated each year, and of these something like from 300 to 500 become specialists. Assuming that 10 per cent. of these choose neuropsychiatry as their specialty, and that each determines on a three years' course of preparation, we must provide for from ninety to 150 men as constantly under training. That the country has existing facilities for training a group of this size or considerably larger, there is little doubt. In the United States there are as many beds for mental cases as there are in our general hospitals, and though it may be admitted at once that many of the hospitals in which these patients are housed have no means of directing the study of this group of men, there remains a fair number of state and private hospitals, and, especially, of psychopathic hospitals, now few but steadily increasing in number, where the facilities for clinical observation and for original investigation are excellent and adequate. In neurology the number of beds available is much smaller, but as numerous as those for any of the other specialties, save only internal medicine and surgery, and is probably sufficient for present needs. Many well organized outpatient services also offer abundant material, and the value of this material for teaching purposes is well illustrated in the clinic which Oppenheim built up around such an institution. The continued opening of group clinics throughout the country is calling for an increasing number of well trained neurologists, but it is probable that the increase in material available for clinical neurologic instruction will keep pace with the demand for men.

An adequate graduate training sufficient for university endorsement of qualification to practice as a specialist in neuropsychiatry calls for a minimum undergraduate and graduate course as follows, in the order suggested by the Council on Medical Education and Hospitals:

### UNDERGRADUATE TRAINING

The basic general training in the undergraduate course should be at least that of a Class A school, giving laboratory courses in neuro-anatomy, neurophysiology, neuropathology, and instructoin in psychology, clinical neurology and psychiatry. Though in the present crowded curriculum it may be accepted that the average student already has more on hand than he can possibly grasp satisfactorily, it is certain that even in schools employing the full number of hours recommended by the American Medical Association (105), undergraduate clinical instruction in neuropsychiatry is not sufficient, especially if the students have not been well prepared in the preclinical branches. As a result, the average general practitioner is lamentably ignorant of nervous and mental diseases and, especially, of functional and behavior disorders, which are those by far most frequently met in general practice, and the prospective neuropsychiatrist has but a limited fund of knowledge in the field he proposes to enter. It might well be emphasized here, however, that important as the time allotment is, much more so is the question of competent instruction. A much closer correlation than usually found is needed between the clinical and preclinical subjects, and work in the latter field should be directed by one at least in sympathy with and able to appreciate the clinician's point of view. In other words, the instructor should teach neuro-anatomy, neurophysiology and neuropathology as applied rather than as pure science, and should have constantly in mind integration, localization and clinical application. In even greater degree is it necessary to bring psychology, as ordinarily taught, into close relationship with the needs of one who will ultimately engage in the practice of medicine. Research in human behavior as a field of psychology is just beginning; yet it is this which the medical student really needs. Considering the lack of clinicians qualified to teach the laboratory branches, the necessary correlation can probably be better secured by proper cooperation between the laboratory and clinical teachers than through the assumption of the preclinical branches by clinicians.

### THE USE OF ELECTIVES IN THE UNDERGRADUATE PERIOD

Courses leading to the specialty, elective in the undergraduate period, may include advanced work in all of the branches named above. Yet it must be borne in mind that with a curriculum as at present constituted, the undergraduate cannot hope to become sufficiently familiar with any one and much less with all of even the preclinical subjects, and a considerable part of the postgraduate period must be set aside for additional work in the fundamental subjects. It must also be remembered that most men select their special field in medicine during the course of their internship or after entering practice, and to such men electives in the undergraduate period will have had no special value. Considering, also, how important it is that specialists in neuropsychiatry should have a good understanding of general diagnostic procedures, particularly as applied in internal medicine, it is easy to see how a student permitted full use of electives may come to his graduate work relatively overweighted in his preparation for neurology, but lacking in sufficient general foundation.

### IMPORTANCE OF THE HOSPITAL INTERNSHIP

The hospital internship is an essential part of the preparation for specializing in neuropsychiatry, and should be either a rotating general service or a service in internal medicine. The broader the understanding of general medicine and of pathology, the better specialist will a man be, and the less inclined to see all things medical as if they were neurologic.

Whether a period of a few years, with some experience in other fields of medicine and especially in general pathology, should precede the graduate training is a difficult subject on which to pass an opinion. To me it seems highly desirable; yet many men with experience in graduate instruction insist that such a course usually results in the individual's losing interest in the specialty and being gradually weaned away to other fields; and if he does return for a graduate course, he is usually unwilling to spend the necessary time for proper training or is but an indifferent student. It seems unnecessary to urge, however, that no one whose experience is limited to one field is likely to be a satisfactory consultant or a safe adviser in a difficult situation.

### POSTGRADUATE TRAINING

Assuming that the student has completed his undergraduate course and has made the best possible use of the opportunities offered and has served his internship, he enters on his period of special preparation either directly or after an intervening period in general practice. With at least five years' preliminary train-

ing, he ought to be largely beyond the need of didactic instruction, and his subsequent work should be such as tends to cultivate an attitude of independent thought and habit of work, yet so arranged for the first eight months as to cover the following:

1. *Neuro-Anatomy.*—Embryologic development of the nervous system; gross and microscopic anatomy of the brain, the cord and the vegetative nervous system; the origin, course and distribution of the cranial and spinal nerves.

2. *Neurophysiology.*—Physiology of the special senses, of common sensation, of nerve muscle preparations, of the spinal cord and brain, and of the vegetative nervous system.

3. *Neuropathology.*—Finer histopathology of the nervous system, the coarser tract lesions, gross morbid anatomy of the brain and cord; with special application to particular diseases and the serology of the spinal fluid.

4. *Psychology.*—Abnormal psychology and practical experience in psychometric examinations.

5. *Physiologic Chemistry, Legal Medicine and Sociology.*—These should be available at least as electives. Indeed, they should be compulsory; but any prospective curriculum is soon overfilled, and the student is left no time for independent thought and action.

In this period, mere review courses in the anatomy, physiology and pathology of the nervous system are not sufficient. Undergraduate instruction in the preclinical subjects, as already pointed out, even when supplemented by electives, does not constitute a sufficient basis for subsequent specialization, and any attempt merely to review these courses must result unsatisfactorily. Only extensive independent investigation in these subjects, wholly different from the didactic work of the undergraduate period, will suffice.

### GRADUATE CLINICAL TRAINING

The courses outlined above with, possibly, a limited amount of clinical work, should occupy the full time of the first academic year (eight months); and the ensuing fourteen months, making a total of two years of eleven months each, should be applied to clinical neurology and psychiatry, including, also, work in neurotology, neurophthalmology, physiologic chemistry, serology and roentgenology, along with a continuation of such laboratory work as naturally arises out of the clinical material observed. The clinical courses should be designed, not to attempt a finished training of the applicant in either branch of neuropsychiatry, but to give basic instruction in both, as the range of the two specialties overlaps in practice to such extent that this need must be met. Instruction in this period should be chiefly through bedside work and practical experience, though under proper supervision.

### GRANTING OF DEGREES

At the completion of two years (of eleven months each), the student's work, if satisfactory, should be recognized by the degree of Master of Science in neuropsychiatry, if the work is done under such auspices as makes this possible.

The two years' course is designed to give basic general training in the combined fields of neuropsychiatry, and the third year may be a continuation of this work; or, if the student desires to perfect himself especially in either branch, the third year of eleven months may be applied to that selected. If a thesis is to be included, and this is generally required in any school where the Ph.D. degree is given, it should be completed in the third year. The thesis will deal with either clinical or laboratory material and will constitute a major subject. A minor should be chosen from some allied field. The satisfactory completion of the third year should lead to a degree of Ph.D., if the graduate school of the institution concerned will accept the work offered—otherwise, its completion should be recognized by a proper certificate.

### CONNECTION WITH A SPECIAL HOSPITAL

Throughout his three-year course the student should be attached to an institution in which high grade work in neurology or psychiatry or both is being carried on. Such an institution, in addition to an adequate number of beds, will have a competent staff, a laboratory in which neuropathology and psychopathology are studied and taught, and will also have an outpatient and social service department. Opportunity should also be offered for observation of high grade work in neurologic surgery. Internship, or assistanceship in such an institution, is a sine qua non for the prospective specialist.

Many of the men who undertake these courses will ultimately be teachers and, if during the time in the undergraduate curriculum, when the anatomy, physiology and pathology of the nervous system is under consideration, men training as specialists in neuropsychiatry could serve as voluntary assistants in these departments, it would revive their knowledge of these fundamental branches and at the same time impart to the instruction a clinical aspect otherwise often lacking. Such junior instructors, being on more intimate terms with the students, could greatly aid promising individuals by placing at their disposal special opportunities and encouraging personal relationships between them and their teachers. Yet teaching must not be allowed to monopolize the student's time, and most of his work should consist in acquiring greater clinical experience and in studying special problems.

### TRAINING FOR RESEARCH

The idea of training men for research should never be lost sight of, but this is not necessarily limited to laboratory fields. In addition to laboratory investigations, men should be taught to weigh clinical evidence, to determine the relative value of symptoms, the facts of observation, and, in general, to distinguish between real science and pseudoscience.

### TRAINING AT DIFFERENT CENTERS

Such courses as are referred to above should be offered only by teaching centers having unusual facilities in material and teachers, and each individual teaching center should give complete courses and these courses should be coordinated as much as possible; but some schools or centers offer better opportunities for certain lines of work than others, and some men give courses which cannot be duplicated elsewhere. It would therefore be of decided advantage to the prospective neuropsychiatrist if he could obtain his instruction in more than one center and thus have contact with as many men as possible during his training. A central bureau of information should be established through which lists of vacancies and other data could

be provided and through which a candidate for a career in neuropsychiatry would obtain the best possible opportunity to become properly trained.

### THE USE OF SHORT GRADUATE COURSES

Shorter courses, of a year, for example, with the time divided equally between preclinical and clinical subjects, or in special subjects for specialists, or for general practitioners as in methods of diagnosis, may be useful if the intention is merely to supplement a deficiency in the previous training. If the work is designed to fit the applicant to specialize in either neurology or psychiatry, with due allowance for the deficiency in the undergraduate work, three years is necessary.

### DEGREES AND LICENSE

Degrees, if granted at the completion of a full three years' course, should be coordinate with those of other specialties, and there might be separate degrees for neurology and for psychiatry or one for both. The regulations determining the granting of a graduate degree should be left to the institution in which the graduate work is completed.

Qualification for the practice of a specialty, if made the subject of definite regulation, should be left to the state and national boards of examiners, possibly advised by national societies representing those most highly qualified in the specialty.

A too rigidly prescribed course to be required of every one entering the practice of neuropsychiatry is to be avoided. Though courses as outlined above necessarily appear dogmatic and lacking in opportunity for initiative, it is not meant to lay down hard and fast rules to which every one who aspires to be a specialist must submit. Standards are essential, but there will always be those of exceptional ability or whose peculiar experience may have been such as to amply qualify for practice, teaching and research, even though they may not have had the benefit of a well planned and well balanced period of study, and the time required will always vary with the preliminary attainments and native ability of the student. Accomplishment rather than time spent should be the determining factor in deciding as to fitness.

### CONCLUSION

In preparing this outline, even with able advice, I am conscious of its defects and realize that only after practical tests of various methods will the ideal one be evolved. It is especially true that in the plans here presented but little allowance is made for the influence of the occasional truly great teacher, such as Louis of earlier years, and Osler of our own times, who by virtue of distinguished professional attainment, high example and powerful personality, draw to themselves the brightest medical minds of their own day and rise superior to all conventional courses of training. Yet all this constitutes no reason why a properly standardized course of study may not be available to those who desire, through this method, to fit themselves for a career in neuropsychiatry.

**Effective Tuberculosis Service.**—If any real advance is to be made in the organization and administration of an effective tuberculosis service, some adequate system will have to be devised whereby both medical undergraduates and graduates, and especially those who propose to take up the responsible duties of a tuberculosis officer, are thoroughly trained.—G. Woodhead, *Brit. J. Tuberc.* **15**:54, 1921.

## LARYNGEAL DIPHTHERIA *

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BALTIMORE

For the years 1919 and 1920 there were 246 deaths in the city of Baltimore due to diphtheria of various types. Of this number, 202, or 82.11 per cent., were laryngeal diphtheria. Prior to 1918 a death certificate reading diphtheria was accepted. Beginning Jan. 1, 1918, a death certificate was not accepted by the department reading diphtheria unless the type of diphtheria was indicated; for example, the certificate must read pharyngeal, tonsillar, nasal or laryngeal diphtheria. This effort was made so that the exact number of deaths from the laryngeal type of the disease could be determined, as it was suspected that a very high percentage of the fatalities in diphtheria were due to the laryngeal type. In the beginning of the year of 1919, an investigation was started to ascertain why so many children were dying of laryngeal diphtheria, and this investigation has been carried on throughout 1919 and 1920 and up to the present time in 1921.

Martin [1] has found in his analysis of records that the highest known death rate per hundred thousand inhabitants from diphtheria was 200 in Berlin in 1883. Paris, he found, had a death rate in 1882 of 100 per hundred thousand of the living inhabitants. William T. Howard, Jr., found a death rate of 263 per hundred thousand of the living population in the city of Baltimore for the year of 1882, which death rate appears to be the highest known at the present time. The death rate in the city of Baltimore from diphtheria has been remarkably low for the past few years. In 1894 the death rate from all forms of diphtheria in Baltimore was 15.7 per hundred thousand people. In the years 1917, 1918 and 1920 it was lower than in any other city in the country with a population over 500,000, with the exception of Los Angeles. The death rate in Baltimore for those years was 9.75, 11.84 and 13.51, respectively, per hundred thousand for all forms of diphtheria, and the death rate for Los Angeles was 7.34, 9.50 and 10.73, respectively, per hundred thousand. If the experience of other cities in 1919 and 1920 with the death rates in diphtheria were like that of Baltimore with a percentage of 82.11 for the laryngeal type of the disease, it appears that our problem in diphtheria is to educate either the public or the physicians, or both, to recognize laryngeal diphtheria earlier, and, when recognized, to give larger doses of antitoxin and to intubate in time, the proper time to intubate being when the recessions of the intercostal spaces occur and not to wait until cyanosis appears.

While the death rate in all forms of diphtheria has dropped since Roux [2] read his masterly paper before the congress in Budapest, in 1894, from about 30 per cent. to 8 per cent. or less at the present day, it would seem that the result could be lowered even to a lesser degree than this, in a disease with which we are probably more familiar than with any other communicable disease except typhoid fever, and certainly in a disease for which we have a specific remedy, the antitoxin, if this remedy is given within a reasonable length of time

* Read before the Section on Preventive Medicine and Public Health at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Martin, L.: Bull. de l'Acad. de méd. **82**: 173 (Oct. 14) 1919.
2. Cited in A Quarter Century of Serum Therapy in Diphtheria, editorial, J. A. M. A. **73**: 1943 (Dec. 27) 1919.

of the onset of the disease. The term "reasonable length of time" is indefinite and variable, but it has been the experience of some health departments that in all cases in which antitoxin was administered within twenty-four hours of the onset, the result was recovery.

It would be unpractical to consider that all cases of diphtheria could be diagnosed within twenty-four or even forty-eight hours of the onset. But it appears quite evident that there is a tendency not to diagnose laryngeal diphtheria in time, and, when it is diagnosed, too great a delay is permitted before intubation is resorted to. In most cities today provision is made for the hospitalization of laryngeal diphtheria. It is a great advantage to have these cases in such hospitals where a trained resident is in constant attendance to reintubate when auto-extubation takes place, as many times the child will die of asphyxia before reintubation can be done. In many rural communities it cannot be hoped to hospitalize all patients with laryngeal diphtheria, but it certainly should be done in communities where a hospital is within reach and where such hospital has a man who has been carefully trained in the art of intubation. Unfortunately, exact information in regard to the total number of cases of laryngeal diphtheria and the deaths occurring among those intubated and those not intubated could not be obtained, and the data at hand are insufficient to determine the real value of intubation as practiced generally in Baltimore during these two years.

Of the patients with laryngeal diphtheria who died, only 101, or 50 per cent., were intubated. Five patients died while intubation was being attempted; in one case permission to intubate was refused, and three patients were reintubated, one of these being reintubated five times. In only 170, or 83.74 per cent. of these 202 fatal cases of laryngeal diphtheria, was antitoxin administered. The maximum dose given in the 170 cases was 100,000 units. The minimum dose was 2,000. In sixty-three, or 31.19 per cent. of the largyngeal

TABLE 1.—RELATION OF ANTITOXIN ADMINISTERED TO TIME OF DEATH

| Hours | Cases | |
|---|---|---|
| | Number | Per Cent. |
| From 0 to 12 | 15 | 8.82 |
| From 12 to 24 | 86 | 50.59 |
| From 24 to 36 | 1 | .59 |
| From 36 to 48 | 24 | 14.12 |
| From 48 to 72 | 7 | 4.12 |
| From 72 to 84 | 1 | .59 |
| From 84 to 96 | 8 | 4.71 |
| Days | | |
| From 4 to 5 | 4 | 2.35 |
| From 5 to 6 | 3 | 1.76 |
| From 6 to 7 | 6 | 3.53 |
| From 7 to 8 | 3 | 1.76 |
| From 8 to 9 | 2 | 1.18 |
| From 9 to 10 | 4 | 2.35 |
| From 10 to 11 | 2 | 1.18 |
| From 11 to 12 | 1 | .59 |
| From 12 to 13 | 2 | 1.18 |
| From 13 to 22 | .. | ..... |
| From 22 to 23 | 1 | .59 |
| Total | 170 | |

deaths, there was also a pseudomembrane present on the pharynx. The onset of the disease before death in 44.6 per cent. of these deaths was longer than three days. The maximum age of the patients dying of laryngeal diphtheria was 8 years, 11 months and 2 days; the minimum age, 4 months and 5 days.

The most important question that confronts the public health officials and communicable disease workers is to find a remedy which will stop the death rate in this scourge. It would seem to appear obvious that, since the introduction of antitoxin by von Bering in 1890, and since the invention of the laryngeal tube by the late Dr. Joseph O'Dwyer of New York in 1888, the death rate in this type of diphtheria should be practically nil. In my experience, covering four years in a municipal hospital of infectious diseases and four

TABLE 2.—TIME RELATION OF PHYICIAN'S FIRST VISIT TO PERCENTAGE OF DEATHS

| Hours | Cases | |
|---|---|---|
| | Number | Per Cent. |
| From 0 to 12 | 15 | 7.43 |
| From 12 to 24 | 83 | 41.09 |
| From 24 to 36 | 1 | .50 |
| From 36 to 48 | 30 | 14.85 |
| From 48 to 72 | 20 | 9.90 |
| From 72 to 96 | 12 | 5.94 |
| From 96 to 108 | 1 | .50 |
| Days | | |
| From 4½ to 5 | 6 | 2.97 |
| From 5 to 6 | 9 | 4.86 |
| From 6 to 7 | 6 | 2.97 |
| From 7 to 8 | 2 | .99 |
| From 8 to 9 | .. | ..... |
| From 9 to 10 | 10 | 4.95 |
| From 10 to 11 | 1 | .50 |
| From 11 to 12 | 2 | .99 |
| From 12 to 13 | 1 | .50 |
| From 13 to 14 | 1 | .50 |
| From 14 to 20 | .. | ..... |
| From 20 to 21* | 1 | .50 |
| From 21 to 22 | .. | ..... |
| From 22 to 23 | 1 | .50 |
| Total | 202 | |

* Complicated by bronchopneumonia.

years in a municipal health department, the death rate from laryngeal diphtheria in intubated cases has ranged from 30 to 35 per cent. Of course, it is true that many of these patients were moribund on admission to the hospital and, although intubated, died within twenty-four hours following intubation, either from toxemia or from aspiration pneumonia.

A most erroneous belief that seems quite prevalent today is that diphtheria of the larynx cannot exist without clinical manifestations of diphtheria of the pharynx, postnares or the nares. It should be remembered that in many cases of laryngeal diphtheria there is no pseudomembrane, and in some few not even a hyperemia of the pharynx. Yet the edema in the larynx may be quite sufficient to cause death by mechanical obstruction unless intubation is resorted to promptly. Although our clinical experience with this disease has compelled us to admit unanimously the great therapeutic value of the antidiphtheritic serum, it must be remembered that, once laryngeal edema develops to such an extent as to cause such marked dyspnea as to bring about recessions of the interspaces, antitoxin will not act quickly enough in this type of patients to overcome the necessity of intubation. Therefore, when diphtheria is suspected and the cardinal indications for intubation are manifested, intubation should be performed at once and no chances should be taken as to the length of time it will take after the serum has been given to produce the desired effect of decreasing the edema or pseudomembranous formation in the larynx.

## CONCLUSION

As 82.11 per cent. of the deaths from diphtheria in Baltimore city for this period were due to laryngeal diphtheria, and as the fatality was in inverse proportion to the promptness with which the physician was called and antitoxin was administered, and intubation was performed in only one half of the fatal cases and

antitoxin given in only 83.74 per cent., it is clear that the hope of the desired reduction in the death rate lies in earlier recognition and timely treatment with antitoxin and intubation.

7 East Preston Street.

## ABSTRACT OF DISCUSSION

DR. SAMUEL W. WELCH, Montgomery, Ala.: The control of laryngeal diphtheria differs in no respect from that of other types of diphtheria from a public health standpoint. There is no control of either type, except by prompt action on the part of the attending physician. The greatest nightmare that comes to me out of the experience of a country practitioner's life has been those cases of neglected laryngeal diphtheria which in my early professional career were called "membranous croup." There are men in Alabama now not much older than myself who still claim that there is a distinction between laryngeal diphtheria and membranous croup. The patient should be isolated promptly. Maximum doses of antitoxin should be given, followed by intubation if distressing symptoms are not immediately relieved. All contacts should be isolated and immunizing doses of antitoxin given. Objection to this procedure is sometimes raised, but since it is the simplest and most effective method of control yet devised, I think it should be followed until its critics discover a better method susceptible of universal use. It may be well to add that especial care should be observed to prevent these patients from assuming the sitting posture. We never know just exactly how much damage has been done the heart muscles by an infection of this nature, and unless the patient is kept in the prone position, disaster may follow.

DR. W. W. TOMPKINS, Charleston, W. Va.: The importance of the use of antitoxin cannot be overemphasized. We know that through its use we may reasonably hope to avoid the more serious consequences arising from infection, and we also know that if physicians do not explain to the families in regard to what they know of its working in specific cases, we shall cast doubt even on our own reputation. To say that diphtheria has a specific in antitoxin does not mean that all cases of diphtheria will be cured by antitoxin; but I believe this, that it is our duty to emphasize the fact that more patients get well under the administration of antitoxin than by any other form of treatment, and I believe, furthermore, that if we will explain matters to the community we shall do away very largely with the opposition on their part to receiving this form of treatment.

DR. H. J. CARTIN, Johnstown, Pa.: It is encouraging that a physician with Dr. Hogan's experience advises early intubation. The majority of deaths in my cases were due to extension of the process downward and not to lack of trained help in emergency. I intubate when the diagnosis is made, remove the string, allow the patient to eat any food he can swallow, and usually extubate on the fifth day.

DR. JAMES A. HAYNE, Columbia, S. C.: I am particularly interested in the control of diphtheria because it is the one arguing point before legislatures of the country, that there is not somebody to disprove everything you say. They have been unable to argue down the facts as to the control of diphtheria. South Carolina probably has as large a morbidity rate from diphtheria as any other state; but through our methods of control we have the lowest death rate of any state except three: Washington, Colorado and Montana. Certain conditions in Montana and Colorado cause this low death rate, but when we can show that Massachusetts has nearly five times the death rate from diphtheria that South Carolina has, one must admit that we have made considerable progress in reducing it. South Carolina was one of the first states in the Union to distribute diphtheria antitoxin free. In 1909 we commenced the free distribution of diphtheria antitoxin. Other states adopted the free distribution of antitoxin, but they limited it and said that a pauper certificate for the patient must be made out or else he could not get the benefit of this free distribution. South Carolina took the stand that the rich man paid all the taxes, and that the poor man could not pay any tax because the rich man had taken all the money he had to pay his taxes with, and that the rich man was entitled to it because he furnished the money with which it was bought, and the poor man was also entitled to it because he had no money and the state should take care of him. Very simple, and the legislature agreed to it. In 1900 the death rate for diphtheria in the United States was 43. In 1918 it was 19. Our death rate at that time was 3. Our plan is simply this: We have distributors in every town, the number depending on the size of the town. Drug stores are the distributing points. Any physician can go there and get all the diphtheria antitoxin he wants. The result is marvelous. Twenty dollars is about the average rate paid for state taxes, and it costs every man 10 cents a year to insure his family against diphtheria. This is good insurance. I am sorry that we have such a high morbidity rate. We shall try to reduce that by the Schick test, and by the use of toxin-antitoxin. And we hope next time we shall be able to report a lower morbidity.

DR. CHARLES B. STEVENS, Worcester, Mass.: In the Worcester Isolation Hospital the mortality from diphtheria has not been diminished in the last few years. It is just about the same. Ten or fifteen years ago it was 6 or 7 per cent. One year we had only ninety-seven cases of diphtheria and no deaths until the last patient was admitted. He died, spoiling our record of that year. That was by far the best record we have ever had, a mortality of 1 per cent. Of late it has been about 9 per cent. I think that is due to the fact that the cases coming into the hospital are more severe, and the reason they are more severe is because the recent graduates of the medical schools wait for the report of the culture. If there is the least question of diphtheria, they should give antitoxin. Furthermore, it is a good plan for a busy physician who is likely to see many patients to carry his antitoxin in his bag. That has been my practice all the time. In that way I waste no time in giving antitoxin, and I give antitoxin without waiting for the culture. Students should be instructed to use cultures only for the purpose of confirming their own diagnosis.

DR. C. C. HUDSON, Richmond, Va.: We have had very successful results in Richmond during the last fourteen years in dealing with this particular problem. The method used by the health bureau in handling laryngeal diphtheria cases was first inaugurated by Dr. E. C. Levy, chief health officer, in 1907. The medical inspector visits all cases of diphtheria as soon as possible after the report is received at the health bureau to determine the type of the disease. If the case is of the laryngeal type, he makes a brief examination to determine the urgency of the symptoms. If the patient shows much obstruction to breathing, the physician is immediately reached and asked to see the case with the diphtheria consultant of the health bureau, who is an expert intubationist. The intubationist then inserts the laryngeal tube where it is considered necessary. He also advises the physician with reference to the amount of antitoxin which he considers necessary. All intubations are done in the home without the aid of a nurse. Only a very few patients are treated in hospitals. During the last fourteen years, 218 cases of diphtheria have been seen by the intubationist, and 146 of these patients were intubated. There were nineteen deaths among the intubated cases, giving a case fatality of 13 per cent., and two of the nonintubated patients died, giving a case fatality of 9.6 per cent. for all cases seen by the intubationist. During 1920, the consultant was called to see nineteen cases of laryngeal diphtheria, in eleven of which intubation was performed. There were no deaths among cases which he saw during the year. Most of the deaths among intubated patients have been due to toxemia, the laryngeal symptoms being secondary to tonsillar diphtheria. Nine patients died within twenty-four hours after intubation of general toxemia. Other complications have included myocarditis, two cases; whooping cough, pneumonia after intubation, pneumonia before intubation, nephritis, plugged tube, and suffocation after removal of tube, one case each; suffocation after coughing up tube, two cases. From our experience in Richmond we would conclude that good results in the treatment of laryngeal diphtheria may be secured by

intubating patients in the home, provided an expert intubationist is in charge of the work and the health department follows closely all cases of diphtheria.

DR. JOHN F. HOGAN, Baltimore: Laryngeal diphtheria may be neglected diphtheria or it may be a primary affair. It is the primary laryngeal diphtheria that is dangerous. Of course, all forms of laryngeal affections are dangerous to life, but I mean dangerous from the public health standpoint. It must be remembered that many of these cases of laryngeal diphtheria are primary and are often confused with spasmodic croup and various other conditions. I quite agree with Dr. Cartin in what he said about nurses. Few nurses have been trained in laryngeal diphtheria. Nurses are not of much value in the treatment of any other infectious disease, as very few of them take postgraduate work in infectious diseases. In regard to Dr. Stevens' statement about the medical graduates diagnosing laryngeal diphtheria, medical students are not taught much about communicable diseases. They receive didactic lectures, but not bedside instruction, in communicable diseases. It might be well to advocate including questions on communicable diseases in state board examinations. Then the medical schools would teach communicable diseases. Laboratory diagnosis in laryngeal diphtheria is not dependable.

In Baltimore our officer sees practically every case of diphtheria, and if the child is dyspneic he gets in touch with the physician and arrangements are made to send the child to the hospital to be intubated. Without a laboratory we cannot diagnose diphtheria. Those of us who have been trained understand that diphtheria can be anything from a simple hyperemia to sloughing. If 84 per cent. of the diphtheria deaths in Baltimore were due to the laryngeal type of diphtheria and if it is the same in other municipalities, your problem is the same as ours. They are dying from the laryngeal type. Therefore, it is to be recommended that all death certificates should be classified and should not be accepted unless they contain information as to the type of diphtheria. The word "diphtheria" alone should not be accepted.

## SEQUELAE OF THE COMMUNICABLE DISEASES OF CHILDHOOD AS A PUBLIC HEALTH PROBLEM *

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In considering this subject let us discuss, first, the nature and cause of sequelae as they apply to the communicable diseases, and, secondly, the functions and interests of public health officers in this particular manifestation of the communicable diseases.

The ordinary conception of a sequela is the occurrence of new symptoms when convalescence seems to have become established. These new symptoms, as a rule, are not manifested in the same way as in the original malady. Among the more common sequelae may be mentioned the various palsies after diphtheria, and the joint and cardiac complications after scarlet fever.

In the acute communicable diseases, we are dealing in every instance with infections, though often the nature of the invading organism is unknown to us. We know that certain acute infectious diseases tend to be followed by certain definite disorders. A number of the chronic infectious diseases are followed by corresponding effects. In the great majority of cases the acute infectious diseases run their course without sequelae of any kind. It may be assumed that the occurrence of disease manifestations after the original disorder has disappeared may depend on the virulence of the organism, the immunity of the individual as a whole, or the immunity of the individual organ. It is really difficult to estimate the remote consequences which result from the acute communicable diseases. While it is true that the majority of human beings have suffered from these affections, nevertheless it is difficult to estimate the damage, slight or severe, which has occurred to some of the tissues or organs, and which possibly will not give rise to symptoms until the original disease has been forgotten. The consequences of infections may at times be of greater importance than the infections themselves.

It may be recalled, briefly, that disease as a result of bacterial action may be produced by toxins, as in the case of diphtheria and tetanus; in other instances, the organisms gain access to the blood and multiply, causing bacteremia or septicemia. In the case of pneumonia and erysipelas, the organisms are found in the blood and are capable of producing toxins. Many pathogenic bacteria do not produce enough soluble toxins in the usual culture fluids to account for the symptoms and changes in the affected body. It is thought that such pathogenic substances are attached to the bacterial cells, and are set free as the bacteria undergo destruction in the host. These substances are called endotoxins. The organisms, after their entrance into the body, meet with certain degrees of resistance, depending on the presence of antibodies in the blood, and on the process of phagocytosis. If the blood of a given host is rich in these substances, he becomes able to resist the infection of the microbe and to neutralize the toxic products.

### SPECIFIC NATURE OF SEQUELAE OF CERTAIN DISEASES

The occurrence of sequelae after certain diseases depends on the virulence of the organism, the resistance or the immune power of the individual patient, and the nature of the organism. The invading organism may produce toxins or endotoxins or it may circulate freely in the blood, producing multiple foci of infection. The specific nature of sequelae depends also on the affinity that certain organisms have for certain tissues. Thus, we know that whooping cough and measles tend to produce bronchial disorders and to tuberculize the patient. A tuberculosis which has been latent in the body of the patient may be stimulated to activity, or possibly a new invasion of tubercle bacilli occurs. In the same way, the toxins of diphtheria and tetanus show an affinity for the nerve structures. The morbid effects of scarlet fever tend, for the most part, to produce kidney, nerve and cardiac lesions. Fifty years ago, the older clinicians thought that sequelae were new morbid processes of some unknown or mysterious nature engrafted on the original disease. It seems evident from recent studies and advances that the sequelae of diseases are but a continuation in some form or another of the original infective process. It is not difficult to understand why a severe anemia may occur after most of the acute infectious processes. We know that, aside from the hyperleukocytosis and hypoleukocytosis and diminution in hemoglobin which occur in the majority of the acute communicable diseases, there is also distinct anemia, diminishing the number of red cells, though in most instances not altering their morphology. We know that many bacteria have a specific hemolytic power and that these organisms may exert their blood destroying action within the living body. It is to be assumed also that the toxins which are made by the

* Read before the Section on Preventive Medicine and Public Health at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

various bacteria may act in the same way. Similarly, the bone marrow may be permanently altered. Possibly some of the postinfectious leukemias and anemias may be explained in this way.

If we consider the infections of the kidney produced by the various acute communicable diseases and especially the sequelae which occur on the part of this organ, we may illustrate to some extent the nature and origin of the late manifestations. We know, for example, that the kidneys may be damaged in various ways. In scarlet fever the injury usually occurs late in the disease; in diphtheria it may occur somewhat earlier. Kidney sequelae may also occur in variola, and more rarely in measles and chickenpox, even to the extent of producing chronic nephritis. The infectious organism may damage the kidney by the deposit of emboli. In addition to such infections, the kidney is frequently disturbed by the effect of fever, and by toxic and abnormal metabolic processes. Frequently, too, the kidneys, in attempting to eliminate the toxins which are circulating in the blood, are subjected to a severe degree of irritation, and inflammation may follow.

In scarlet fever, streptococci are not infrequently found in the urine. The nephritis following scarlet fever may become chronic and persist for months or years, or it may last a lifetime. Schick is of the opinion that the organisms producing scarlet fever are not completely destroyed during the febrile period, and that a few continue to be active until convalescence. He thinks the host is hypersensitive, in the second to the sixth week, to the scarlet fever organisms having toxic and infectious properties capable of producing nephritis and other sequelae. It is noteworthy, too, that nephritis as a sequela of scarlet fever may occur in mild as well as in severe cases. Schick expresses the opinion that though streptococci are found in the urine of these scarlatinal nephritis cases, they themselves are not the sole etiologic factors in the production of kidney inflammation.

In the severer cases of diphtheria, the kidneys are usually involved, though the character and extent of involvement vary to a great degree. The cortex is usually most markedly affected, and there are inflammatory changes in the parenchymatous as well as in the interstitial tissues. In either event, whether it be a nephritis of scarlet fever, diphtheria, or other acute communicable diseases; there is an appreciable damage to the kidneys, and the question of restoration or reparation is of importance in considering the immediate as well as the remote sequelae.

The pathologists tell us that after inflammation, injury or operative excision, the kidney tissue shows no evidence of regeneration of the parenchyma. Where there is extensive injury or destruction of the kidney parenchyma, repair occurs for the most part by a replacement with connective tissue. Nevertheless, in certain of the lower animals, new tubules may form from the medullary collecting ducts; but, in the adult animal at least, no glomeruli are formed. On the one hand, repair and regeneration do not occur in extensive kidney lesions because the remaining cells are not normal. On the other hand, early inflammatory processes which have been initial in the organ are progressive, and tend to continue more or less without abatement during the active inflammatory process. Eventually they are followed by fibrosis. In adult life, this may be a tardy result of infectious processes which occurred in infancy or childhood.

## NERVOUS COMPLICATIONS AS SEQUELAE

The sequelae affecting the nervous system are of frequent occurrence and great significance in a variety of acute communicable diseases. Nervous complications are characteristic for all acute infections. There is, however, a variation of the affinity of the virus for the different parts of the nervous system in the several diseases; thus, diphtheria has an especial affinity for the peripheral neurons, and the exanthematous diseases and mumps for the meninges, while a considerable number of the infections tend to produce encephalitis. In 1891, Freud[1] mentioned among the frequent causes of sporadic encephalitis these diseases, in the order named: measles, variola, scarlet fever, rötheln, whooping cough, pneumonia, typhoid fever and mumps. Thus, it may be observed that encephalitis may be a sequela of the acute communicable diseases. Encephalitis usually produces hemiplegia, but it may also be associated with convulsions, contractures, choreiform and athetoid movements, posthemiplegic epilepsy and idiocy. Encephalitis is a process which causes inflammation of the nerve cells. At the onset there is usually an associated cerebral edema and an increased vascularity. The initial symptoms are characterized by coma, fever and diffuse paralysis. When these subside, a residual paralysis remains, more or less permanently. It is well known that, where the whole neuron undergoes destruction, there is no regeneration in man or in the lower animals. After the initial edema and congestion disappear, the inflammatory area becomes replaced by fibrous tissue, and the nerve cells which lose their fibers degenerate; hence the permanent disability in those individuals in whom extensive brain inflammation has taken place.

In the peripheral nerve paralyses of diphtheria there is an involvement of the nerve sheath, with occasionally some encroachment on the axis cylinder. It is a clinical observation that, in peripheral nerve paralyses following diphtheria, complete recovery usually occurs after a shorter or longer period of time. Notwithstanding this, however, there may be degenerative lesions in the cells of the cortex, pons or medulla, leading secondarily to changes in the tracts of the spinal cord and causing complete and permanent paralyses. Lesions of the vagus or phrenic nerve, or of the contained cardiac ganglions, may lead to severe cardiac or respiratory symptoms, usually terminating in death. The point to be emphasized in relation to the nerve sequelae of diphtheria is that, in peripheral nerve paralyses, regeneration is possible. In central and vagus nerve paralyses as well as in the cardiac ganglion degeneration, permanent disability or death ensues.

Meningitis is sometimes associated with scarlet fever and measles. It usually occurs after an otitis media with mastoid involvement. Permanent blindness sometimes results from scarlet fever. This is usually bilateral, and has been observed without the occurrence of albuminuria. Deafness is not altogether a rare complication. It occurs frequently in scarlet fever and sometimes in measles, but rarely in mumps. It is not infrequently associated with epidemic cerebrospinal meningitis. Deafness may be due to middle ear disease, with severe destruction, such as occurs when the organism gives access to the middle ear, producing a membrane in the tympanic cavity and destroying or producing necrosis of the small bones as well as of the

1. Freud, Sigmund: Klinische Studie über die halbseitige Cerebrallähmung der Kinder, 1891.

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mucous membrane. Measles and scarlet fever sometimes produce severe middle ear involvement with associated deafness. The deafness may be labyrinthine in origin or it may be central, owing to nerve involvement.

### CARDIAC DISTURBANCES AS SEQUELAE

The cardiovascular system is attacked in many of the acute infectious diseases. Mild affections sometimes occur after a more persistent and severe illness. In scarlet fever the so-called myasthenia cordis is frequently observed, and is characterized by arrythmia and irregularity, with intermittent pulse. This condition is usually transitory, lasting for two or three weeks, though it may continue for months. It is not clear whether this condition depends on degenerative myocardial changes, or whether it is due to toxic disturbances of the cardiac muscle without manifest myocardial lesions or, possibly, to alteration in the conduction system. On the other hand, severe cardiac disturbances may be the direct result of the infectious diseases, and appear during the acute course, though very frequently as sequelae. This is notably true of diphtheria, whose toxin seems to have a striking affinity for the heart muscle late in the disease. In other instances the organisms of scarlet fever or rarely, of measles, and certainly those of rheumatism, gain access to the blood stream and find lodgment in the endocardium, myocardium or pericardium. These changes may lead to death or to more or less total or permanent disability. Arteriosclerosis is not uncommonly produced by the infective diseases; and, though the arteriosclerosis is not often discovered in childhood, it is believed that the sclerotic changes of the vascular system occurring early in life have had their origin in some severe infectious disease in young life.

The fact remains also that complete regeneration of the cardiac muscle after extensive inflammation does not occur. Fibrosis may result and scars may occur and, though eventually apparently restored function may be brought about, more or less permanent injury remains.

### PULMONARY SEQUELAE

The pulmonary sequelae of measles, whooping cough, influenza and, occasionally, scarlet fever are frequent and of great importance. Bronchopneumonias occurring after measles, whooping cough and influenza are so frequent that they may be considered manifestations of these diseases. Bronchiectasis and pulmonary fibrosis are squelae which are familiar to every clinician. Even more serious, however, is the occurrence of tuberculosis after measles and whooping cough. As has already been mentioned, these two conditions may be spoken of as tuberculizing diseases. In consequence of this invasion of tuberculosis, and because of the danger of its propagation, whooping cough and measles have a special interest for the public health officer.

One might go on at considerable length enumerating the common and the rare sequelae of the acute communicable diseases. This would, however, serve no useful purpose and would lead us too far. It is not necessary to enumerate all of the sequelae which may occur after acute infectious diseases. I have endeavored rather to emphasize the most important factors on which their occurrence depends, and to point out the underlying pathologic principles which determine their nature, origin and effect on the organism, and particularly the dependence of sequelae on the processes of infection and reparation.

### SEQUELAE IN CONSIDERATION OF VITAL STATISTICS

The acute contagious diseases present a variable mortality rate during the primary stages. It should be mentioned also that the frequently occurring sequelae incapacitate the patients physically as well as mentally. They tend to establish a mortality rate which it is difficult to state in tables of vital statistics, and which therefore constitutes an unaccounted for death rate, as a result of the remote effects of communicable diseases.

In the death certificate, these patients are reported to have died from heart, kidney, pulmonary or cerebral lesions, whereas the exciting cause of death is most frequently lost sight of.

It is difficult for one not directly concerned in public hygiene to estimate the importance of the sequelae of the communicable diseases from the public health standpoint. It is true that, if a patient who has been ill with diphtheria continues to harbor diphtheria bacilli in his nose or pharynx, or in a discharging ear, he is a carrier and becomes a menace to public health. The same is true of scarlet fever and typhoid, as well as of epidemic cerebrospinal meningitis.

It is possible, too, that the public health officer is interested in the sequelae of disease because whatever tends to the production of chronic invalidism, whatever deteriorates the health of citizens or incapacitates them for their normal vocations, may affect the physical, moral or mental status of the people, and may become an economic, a social and a state problem which would call for the most thoughtful consideration of public health officials.

It would be of great interest from an epidemiologic standpoint if we could be furnished with accurate figures concerning the frequency, nature, sequelae and remote effects of the communicable diseases as well as the mortality rate, as compared with the statistics which deal with the acute stages of these diseases. For example, statistics relating to the extent of the residual effects of poliomyelitis, the frequency of lung, kidney and heart complications, and the number of cases of deafness and blindness; indeed, statistics on all matters referring to the immediate as well as the remote results of communicable diseases, would be of the greatest value.

### CONCLUSION

After all, it seems that the most valuable lesson to be learned from the study of the sequelae of the communicable diseases is the need to emphasize the disastrous results not only of the immediate but also of the remote effects, and to urge upon all concerned the great importance of their prevention. The thought must occur to every one that the most important factor in the prevention of the acute communicable diseases is the acquisition of more definite knowledge as to their cause and their mode of transmission. Experience has taught us that intelligent preventive measures can be carried on when exact etiologic factors or modes of transmission are known. The reasons for this statement are obvious and call for no further explanation. A rational campaign for prevention of infection must depend on a definite knowledge of the exciting organism, its method of transmission, and its life cycle within and without the body.

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## ABSTRACT OF DISCUSSION

Dr. B. Franklin Royer, Philadelphia: I wonder whether Dr. Abt or any of you have seen many of the dangerous sequels of measles and diphtheria, the cases of overwhelming nephritis and meningeal affections, except in children whose mouths and throats have been neglected, children having adenoids, enlarged tonsils or bad teeth or all of these affections. If we are to do our part toward preventing the sequels of communicable diseases, we must promote a preventive medicine campaign in the direction of establishing oral health prior to the inception of these diseases. In a clinical experience a few years ago extending to 7,000 cases of diphtheria, scarlet fever, measles and other communicable diseases, I examined carefully the mouths and throats of every patient. The severe sequels were seen in association with bad oral health. Any one who has had such an experience dreads to see a child enter the hospital with great bulging tonsils and nasal blocking from adenoids. They anticipate in advance these dreaded sequels. If there is anything I would urge on health officers along the lines of preventive medicine, it is that of urging removal of diseased tonsils and adenoids very early in life, with the expectation that removal of these diseased structures will do a great deal to avert the incidence of communicable diseases themselves; and it is the most certain guarantee against the sequels of these diseases.

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# DIPHTHERIA CONTROL *

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The subject of diphtheria control has engaged the attention of public health workers for many years. The results of these activities have without doubt somewhat limited the spread of diphtheria, and have procured a definite decrease in mortality rates. With the development of each new procedure for the control of diphtheria, great hopes were entertained for the complete eradication of the disease; yet we find, as the years pass by, that diphtheria is still present and has in truth become endemic.

In reviewing the mortality rates for diphtheria during the last twenty years, as reported both from the registration area and in Massachusetts, the marked decline in the number of deaths per hundred thousand population from 43.3 to 15.4 is a source of great satisfaction, and we rejoice in the saving of life that has actually resulted. Further perusal, however, of the statistics for this period shows that this marked decline came largely during the first ten years, and that a fairly constant mortality rate has prevailed during the latter ten years, declining only from approximately 20 to 15.4.

A second striking fact is that the fatality rate for diphtheria for a considerable period of years has not varied more than 1.8 per hundred thousand population, ranging from 9.3 to 7.5.

Again, but once during this time has the case rate fallen below 180 per hundred thousand population, the maximum rate reaching 283.4, and the minimum 154.8. With these statistics before us, it behooves us to consider carefully the epidemiologic factors responsible for these continued rates, particularly in the light of the present day methods available for the prevention and control of this condition.

For the purpose of discussion it is assumed that your endeavors to control diphtheria are identical with those in practice in Massachusetts; that your results are similar, and that, in all probability, your failure to make the progress hoped for is due to the same factors which exist here in this commonwealth.

Granting these premises to be true, we have arrived on the common ground that diphtheria is not controlled to its fullest possible extent.

### FACTORS IN SPREAD AND CONTROL OF DIPHTHERIA

It appears that the main factors which may be held responsible for the continued undue incidence with resulting mortality are three: first, and to my mind the most important, the incomplete application of procedures of proved worth for the prevention and control of diphtheria, for in the hands of public health workers has been placed a complete armamentarium with which to wage our fight; second, the failure of early diagnosis, and the tardy and often insufficient use of antitoxin; third, the lack of realization by parents of the seriousness of the sore throats of childhood and adolescence, with the resulting delay in securing proper medical attention. It is on these three points that future effort must be intensified, or from which we must start if we are to attain the maximum results so earnestly desired.

That we may have before our mind's eye the complete picture of the available agents which should be used in the control of diphtheria, it is perhaps desirable to enumerate them and, as we progress, to recall our individual efforts with the result attained, for here we may find a partial solution of our difficulty.

In nearly all of this country there is available, through a morbidity reporting system, the machinery for the notification to the health officer of the existence of the sporadic case or the incipient outbreak. Private or governmental laboratories furnish not only diagnostic aid, but also serum for treatment and immunization; while, through the use of the Schick test, the susceptibles may be determined and their subsequent immunization furnished actively by the use of the toxin-antitoxin mixture. All necessary police power for effective isolation and sustained quarantine is at hand, and it completes our line of defense. Surely here appears to be sufficient means to aid the public health worker in efforts to prevent and control this condition, and one can hardly refrain from asking, Why has it not been entirely accomplished?

Serious reflection on the use made of these agents brings one to the conclusion that not sufficient intensive effort has been applied in epidemiologic investigation of the sources of infection. We have been perhaps too well content in the checking of outbreaks and not sufficiently concerned whence the initial infections have been received.

### PERCENTAGE OF RECURRENCES

With deep chagrin it must be admitted that 25 per cent. of the undue incidence of diphtheria in Massachusetts for the past year has been recurrences in the same communities. One of the larger cities of the commonwealth reported, for a period of eighteen months, nearly 500 cases, 32 per cent. of which furnished evidence of multiple household or neighborhood infection. Ninety of these multiple cases indicated a probable exposure to a common source of infection, being reported within forty-eight hours and from thirty-nine households. Seventy-three cases from thirty-seven households were reported four or more days later than the initial case in the household, and

* Read before the Section on Preventive Medicine and Public Health at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

fifty-one cases in forty-four families gave a history of contact with a case in an adjoining or nearby house.

It is not an extravagant thought that, were proper and adequate measures instituted promptly on the discovery of the initial case, the number of secondary infections might be greatly reduced.

For this particularly distressing picture of probably needless exposure and illness, and perhaps death, one may well ask what remedy might be offered that is adequate and at the same time within the range of the average appropriation of the public health worker.

### MEASURES FOR CONTROL

Experience has proved the answer to be cooperative effort on the part of family, physician and public health worker, and that it occasions little or no additional financial outlay but does call for considerable effort. Full realization of the value of isolation and the maintenance of quarantine by the householder, culturing and passive immunization of family contacts by the physician, and epidemiologic investigation by the public health official seeking the carrier, missed or unrecognized cases in school or in the neighborhood, will do much to limit the spread of the infection.

It appears to be true that there is insufficient thought given to the importance of the neighborhood contacts and the large factor they may be in the continued spread of diphtheria. It is possible that personal contact between children of the preschool age group is more intimate than among older children and, though more circumscribed, furnishes a source of infection sufficiently important to receive the same attention as would be given to the infection within the school group.

The sine qua non of the control of diphtheria is, of course, found in the use of the Schick test, with the immunization by toxin-antitoxin of those who do not possess a natural immunity. Prevention was ever better than cure, and in this procedure one sees this truth magnified to the *n*th power. Byard writes, "The Schick test has made the use of antitoxin in exposed subjects an intelligent and impressive procedure." The simplicity of technic, its absolute harmlessness, and the correctness of reaction as it portrays the presence or absence of immunity, places it well in the foreground of all preventive measures.

Experience has taught us that diphtheria will never be controlled by the use of antitoxin and by culturing alone. Our further reliance for prevention must be placed in the Schick test, with proper immunization for those who may have need for it.

That the epoch-making work of Park and his associates has done much to introduce and to popularize the use of the Schick test and of the toxin-antitoxin mixtures among physicians and public health workers is well recognized, and all of us must now assume our share of their endeavors, carrying to the farthermost corners of our respective states the knowledge that simple, safe and effective means are at hand for the prevention of diphtheria.

We believe that we are making reasonable progress in this state in introducing this preventive procedure. Several of the state institutions have been completely Schick tested, with active immunization given where needed. Two cities are maintaining Schick clinics for the schoolchildren. One city cared for more than 700 children last month. All nurses before entering on their duties in contagious hospitals receive the benefit of this test; and, cooperating with the Public Health Committee of the Massachusetts Medical Society, demonstrations have been held in local hospitals, that the local physicians may become acquainted with the procedure.

It may be said in passing that we have made approximately 5,000 Schick tests in Massachusetts on various groups of people. Our statistics show substantially the same percentage of susceptibles as has been demonstrated elsewhere, and we have had but one person develop diphtheria who has received the full course of toxin-antitoxin mixture.

If more evidence is needed as to the efficacy of these procedures, we may add the experience of one of our state institutions for young boys, in which diphtheria outbreaks were almost as recurrent as are the months of the year. Nearly five years ago this institution was completely Schick tested and immunized, and all new admittances are tested on entrance, with the result that there have been no further diphtheria outbreaks in the institution, and but two cases reported, with patients having been infected before admittance.

Because of the frequent inquiries made as to the use of the Schick test and of the toxin-antitoxin mixture in infected households, it is necessary once more to remind public health workers that active immunity is produced only after a considerable number of weeks have elapsed, generally from eight to twelve weeks; and that passive immunity is procured at once by antitoxin, and will protect only for three to five weeks. The proper procedure, therefore, in the face of an outbreak is to administer antitoxin to all known contacts, securing immediate protection, and later to apply the Schick test and immunize those who are proved susceptible.

### IMPORTANCE OF PROMPT DIAGNOSIS

The bacteriologic laboratory has been of tremendous assistance in the diagnosis of diphtheria, and yet through no fault of its own has at times impeded the control measures. Some physicians have been slow to put into practice the dictum that "a sore throat needing a culture for diagnosis needs antitoxin for safety," and they persist in waiting for a laboratory report of culture before administering antitoxin. We must reiterate this fact until it becomes second nature for us to think of swabs and antitoxin rather than antitoxin and positive laboratory reports, as is now the habit.

Bacteriologists must give as rapid a diagnosis as possible. The experience of our state laboratory is most interesting, and the procedure is as follows: All swabs received are examined at once with an approximate immediate return of 60 per cent. to the physicians. At three and eight hour intervals, cultures are again examined and 90 per cent. are reported. A final examination is made after twenty-four hours has elapsed, confirming all previous diagnoses. As all positive reports are telephoned or telegraphed to the physicians, no undue delay is experienced and immediate treatment is assured.

There can be no question that many parents do not realize that sore throat with mild constitutional symptoms may possibly be diphtheria, and an appreciable number of our deaths each year are attributable to this delay in seeking proper medical attention. There is but one solution to this problem, and even though our efforts to educate them have given only partial success in the past, we must continue our efforts, seek-

ing at every opportunity publicity through lectures, newspapers or bulletins, together with work done with the schoolchildren.

### SUMMARY

While there has been a marked advancement made in the treatment of diphtheria with a corresponding decrease in the mortality rate since the introduction of antitoxin, there has not been the reduction in the morbidity that might reasonably have been expected.

This constant high incidence becomes more remarkable when it is realized that all necessary laboratory aid and epidemiologic knowledge is at hand to prevent and control diphtheria outbreaks.

Reaching beyond this, however, is our knowledge of the Schick test for the determination of those susceptible to diphtheria infection, and of the toxin-antitoxin mixture for the immunization of the nonimmune.

In spite of the fact that all agencies necessary for the eradication of diphtheria from the community are available, we still have the infection mostly in endemic form.

A careful study of the various factors entering into our failure to make much progress in the prevention of diphtheria brings to light the fact that not sufficient intensive work is done by public health authorities, save under epidemic conditions.

Little or no effort is expended to find the source of infection in the sporadic case, and carelessness in culturing for release of quarantine adds many cases to our yearly total.

Often effort is directed to the school age group, with resulting school cultures, while perhaps the preschool age group is far more likely to be the source of infection.

What is the remedy for this condition?

1. Education of physicians and the laity to the fact that all agencies are available for the immunization of the susceptible, and for the diagnosis and the treatment of the disease.

2. Intelligent study and treatment of the "carrier" or, perhaps more correctly, the "missed case."

3. Education of the laity to the fact that diphtheria is often insidious in onset and mild in course, and recovery is uneventful for the patient, yet serves as the focus of multiple infections of a far more virulent type.

4. Education of local health officers as to the necessity of intensive investigation of the source of each case, and of the necessity of immunizing other members of the infected household.

### CONCLUSION

It is only by the closest sort of cooperation with physician, householder and the public health worker that diphtheria is to be controlled. All must join forces to spread the information so concisely expressed by Professor Winslow, who says:

> We possess a more complete knowledge of diphtheria and a more complete power over diphtheria than in the case of any other communicable disease. We can detect the incipient case and the carrier. We can measure natural immunity by the Schick test. We can produce passive immunity by the use of antitoxin and active immunity by the use of toxin-antitoxin mixture.
>
> Every weapon which could be needed to fight this enemy is in our hands, yet diphtheria continues to occupy third place among the communicable diseases and kill eleven or twelve thousand persons in the registration area each year.

State House.

## ABSTRACT OF DISCUSSION

Dr. John T. Black, Hartford, Conn.: Unquestionably diphtheria is increasing, although it is often stated that the increase is not actual, being merely the result of better diagnosis. But I think that in the more thickly populated states it is increasing, although the fatality rate is lessening. Still, that should not be satisfactory, and from the standpoint of administration and control of diphtheria, the local health officer wants light. The control methods in the school can be made most effective. Every child entering school should be Schick tested as a routine; so that in five or six years you practically have control of all the children of school age, and with the reduction of the foci among these you will certainly reduce the foci in the preschool age. This is the strongest factor for control at the present time. The scheme of education is ideal, but it is not practicable, especially when we have so much educating to do as we have at the present time. In the average community we have one lone health officer promulgating diphtheria propaganda, and offsetting it are the Christian scientists, the chiropractors and a dozen other cults.

Dr. Edward L. Bauer, Philadelphia: The possibility of diphtheria eradication in a large community is well brought out in the paper. Yesterday Dr. Zingher of New York presented a formidable array of figures, the results of work done on 50,000 New York schoolchildren, which has been preceded by other valuable statistics published by Drs. Park and Zingher. Their work, plus work like Dr. Carey's, and my own work in Philadelphia with 5,000 children personally tested and immunized and other observers working with large groups of children, show a consistency in results that places Schick testing and active immunization well beyond the experimental stage. The work done in Philadelphia has been done largely in orphans' homes and asylums where we could watch the children carefully until their discharge from the institution. About 60 per cent. will be available for fifteen years. We have already come to some very definite conclusions in regard to these children because of the immunity granted them during the last few years. Those that had an immunity maintained it. Occasionally a child is not immunized with one series of injections, say 1 or 2 per cent. The Schick test should be performed from three to six months after active immunization, and if still positive, reimmunization is indicated. This will prevent the embarrassing situation referred to by Dr. Carey. In large communities the work on an extensive scale must be started somewhere, and the public schools where the children can be handled most easily furnish as good a place as any to make the start. However, other places must not be neglected. Because of the greater number of susceptibles, the child of preschool age should not be overlooked. Therefore, trained workers should be stationed in dispensaries and clinics. With the aid of social service workers who will carry out advertising and other neighborhood campaigns, great inroads can be made on this young population. Health centers, milk stations, public playgrounds and other such community centers can be used as prophylactic stations to reach the young child. We could certainly reach a far greater number of susceptible children by using these skilled workers systematically than by merely passing out materials to physicians promiscuously with almost certain indifferent results. The recipients of freely distributed materials are habitually careless with it, and would so do harm and bring criticism to the work and its technic. This would deleteriously influence the ultimate success of this work.

Dr. C. A. Earle, Des Plaines, Ill.: It is almost unbelievable that in Boston only 6,000 Schick tests have been made. The Schick test and toxin-antitoxin immunization are the greatest potential agents we have in the control of any infectious disease. I scarcely know why the Schick test is not more generally employed than it is. It indicates with almost certainty the existence of immunity to diphtheria. The immunity resulting from three injections of the toxin-antitoxin mixture is certainly very encouraging. In my own experience it has been successful in 87.5 per cent. I have given more than 2,700 injections of toxin-antitoxin with only one unpleasant result. This was in a nurse. It was four or five months

before the arm healed. No loss of limb nor deaths have occurred in Chicago as a direct result of the injection of the toxin-antitoxin mixture.

DR. ABRAHAM ZINGHER, New York: During the last four months we had the opportunity of applying the Schick test to more than 52,000 children in the public schools of Manhattan and the Bronx. Children giving positive reactions received the injections of toxin-antitoxin. We found that among the children of the more well-to-do classes of the population there was a much higher proportion of susceptible individuals than among the children of the poorer classes. The ratio was as high as 3 to 1. On the one hand, relative segregation of one group of children, and, on the other hand, crowding and repeated exposure of the children of the second group explain these interesting findings. Another important point that came out in this work was the frequency with which negative pseudoreactions were noted among the children of public school age. In some schools we found as high as 25 per cent. negative pseudoreactions. These individuals are not only immune to diphtheria, but they are the very ones who show fairly severe local and constitutional symptoms after toxin-antitoxin. It does not seem, therefore, to be advisable to inject all children under 10 years of age with toxin-antitoxin, as was suggested by Dr. Jones yesterday. We should limit the age period during which the Schick test can be disregarded to the preschool age, that is, from 6 months to 5 years, and to the children just entering the public schools. In this age group a very high proportion are susceptible to diphtheria and very few give a negative pseudoreaction. The injections of toxin-antitoxin are well tolerated, and very few of these children show painful local reactions. By omitting the preliminary Schick test and giving toxin-antitoxin to all children in this age group, the work will be greatly simplified for the general practitioner and for the school physician. We must, however, be very cautious not to certify to the fact that a child is immune to diphtheria after toxin-antitoxin injections unless he has been proved to be so by the Schick test. This safeguard should never be omitted, as otherwise children who have been injected with toxin-antitoxin and have been pronounced immune without a Schick test may later develop diphtheria, and the work will be thrown into disrepute. The literature that we use in connection with the work in our public schools can be obtained by writing for it to the Research Laboratory of the New York City Department of Health.

DR. BENJAMIN T. LORING, Watertown, Mass.: I want to call attention to an instance showing one reason why the mortality rate does not go down further, namely, the lack of efficiency of persons having the care of children. A child, aged 7 years, was suffering from a sore throat. The parents did not call a physician, and the child had no treatment. The child was out of school, recovered, and came back to school. It was only after a week, when a younger sister died from diphtheria, that we knew what the trouble was. But the child who recovered had been allowed to return to school, and that illustrates a second point in the lack of efficiency, the teacher. The rule in our town is that a child absent from school by reason of contagious disease or from unknown cause shall be inspected by the board of health or the school physician before being allowed to return. This child returned after a vacation week, with all the rest, and somehow slipped by without being noticed. Perhaps the teacher was not without excuse, but she did not enforce the rule. From that child the disease spread to others. We have had three deaths, although only one was that of a pupil, the others being in younger children. The third point in the lack of efficiency is the attending physician. The school nurse went to the home of every child absent from school and called attention to the fact that the pupils had been exposed to diphtheria, and that caution should be observed if sickness appeared. We took cultures of the nose and throat of every child present in school. The parents of one absent child, who was sick, reported that their physician stated that the child was suffering fom ptomain poisoning. The child was out two weeks, and was allowed to come back to school, but two younger children in the family became sick, and we have received positive reports on cultures from both of them. Until we have Schick tests done and immunity established in all susceptible children, we must do everything possible to secure greater efficiency at these three points: the parents, the teachers and the physicians, or the present mortality will continue.

DR. BENJAMIN WHITE, Boston: Massachusetts has been carrying on a vigorous campaign in the interest of the Schick test and injections of toxin-antitoxin. We have not confined our attention to the cities, however, but have worked throughout the state. I can add to Dr. Carey's figures 2,000 or 3,000 Schick tests which I have recently analyzed, and it is very interesting to know how closely the figures for the city population correspond with Dr. Zingher's figures. However, when we come to the rural communities, we find a very much higher percentage. We find in some instances, in thinly populated regions, that as high as 50 per cent. of the adults will react to the Schick test. These individuals, however, show very little pseudoreaction. Our experience has shown us that it is inadvisable to give toxin-antitoxin to individuals who give a strong positive or a pseudoreaction. These individuals will have a constitutional reaction which is never dangerous, so far as I know, but is very disagreeable, and therefore we do not advise it. There recently appeared an article by Dr. Blount of New York which tends to discourage the Schick test. He reported eight deaths. Dr. Park asserts that these children did not have diphtheria, but a streptococcal infection. What is the danger in toxin-antitoxin injection? So far as I know there is no objection to its use. As far as we have seen there have been no bad results.

DR. JOHN D. MCLEAN, Philadelphia: I notice in the discussion of diphtheria control that it has had to do entirely with the control of this disease in institutions and schools, a problem not as difficult as that in communities where the disease exists to a greater degree. One speaker stated that this disease will be controlled when they can control the children of preschool age, and that is true. As to toxin-antitoxin: Never will that message be brought to the attention of the public to a degree which it deserves until those experimenting with toxin-antitoxin train the medical profession to the belief that it is a thing worth while, and especially train the professors of medicine teaching in the medical schools. One of the speakers stated that there is value in taking cultures and in the use of antitoxin, but not to the degree that there should be. We have not yet educated the public — and when I say "the public" I mean the medical profession — to the value of antitoxin. In Pennsylvania we give the antitoxin treatment free. It costs about $75,000 a year, but it is well worth while. We are getting cases of diphtheria reported today that were never reported before. Therefore, we are not assuming that we have reduced the mortality, because we are getting more cases reported. We had a story of 800 or 1,000 words published in the newspapers of the state in every section. In the antitoxin package is placed a little circular which had this statement on it, taken from our morbidity reports: "Out of 100 patients who did not receive antitoxin treatment, forty died. Out of 100 persons who received antoxin treatment forty-eight hours after being infected with diphtheria, seven died. Out of 100 persons who received antitoxin treatment within forty-eight hours of the beginning of the disease, only two died." It is practicable. Try it. We think we have reduced the mortality rate nearly 50 per cent.

DR. F. G. CURTIS, Newton, Mass.: We decided that we would try the Schick test on the schoolchildren of our city of 47,000. We put out a small circular of fifteen lines in the schools and directed our school nurses to talk up the Schick test. May 1 we began our work with volunteers. We have a school population of 7,000 and up to today we have Schick tested 700. And before we finish, which will be next month, we shall probably have been 850 and 900 Schick tested. One thing that has impressed me very much is the cooperation of the physicians. They have taken it up and urged their patients to have their children tested, and they are doing the immunization work for us. We notify them or the parents that the child is susceptible and should be immunized, and advise them to have their physician do it. Later, if the physician does not, we shall take it up and do it. But the

thing which has impressed me most is, as I say, the cooperation of the physicians and the interest which the children have taken in the results. They ask whether they can take it, and go home and urge the parents to have the work done.

DR. BERNARD W. CAREY, Boston: Our efforts in Massachusetts have been solely directed toward giving assistance to the physicians in this state in the administration of toxin-antitoxin, and in the use of the Schick test. The figures I have quoted, 5,000, represent very small groups, done at various times. Our physicians have been invited to be present when the method was demonstrated, the reaction read, and a talk given on the use of the toxin-antitoxin mixture. Were we to stop at 5,000, I should feel that the department had failed in its duty. But that is just a demonstration to physicians as to the method. Under our present law, it is utterly impossible for the department to go out and do this work completely. We have been especially assisted in this procedure by a committee of the Massachusetts Medical Society which had a small sum of money which was devoted to this purpose, and I think as time goes on this sum will probably be enlarged and applied in this one direction, to educate the physicians to adopt this procedure in their own practice.

## HEART DISEASE IN CHILDREN OF SCHOOL AGE *

ROBERT H. HALSEY, M.D.
NEW YORK

The many and various surveys of the children attending the public schools of New York City have aroused increasing interest in the children with heart disease, so that, when the Association for the Prevention and Relief of Heart Disease was organized in 1915, one of the first efforts was to obtain the interest and cooperation of the board of education for a study of the problem. It was in this way that my interest, and that of my associate staff at the New York Post-Graduate Medical School and Hospital, was aroused to accept the task, which was begun in the early months of 1917, but discontinued during the war. On our return in 1919, we found that the Public Education Association had formed a cardiac committee and obtained funds from the board of estimate with which to undertake the formation of special classes for the segregation of cardiac children. The efforts of the chairman of that committee aroused the interest of the Children's Aid Association, and instigated that association to provide a building with ideal class rooms where three ungraded classes of twenty-five children each were organized as an annex to Public School 64.

The Public Education Association provided funds for an experienced social worker, who has had the executive work of supervision and follow-up. The principals and teachers of the schools in the vicinity have all cooperated in the task of finding the children having, or suspected of having, heart disease and referring them to us for examination. The section on child hygiene of the department of health promptly examined the children entering the schools, so they could be the earlier sent to us. From this enumeration, one may realize that it has required the cooperation of a very large number of departments and individuals; and as one cannot give to all individuals by name the credit due, I may state that it is a pleasure to acknowledge and at this time to express appreciation of the work done by the many who must of necessity be unnamed.

* Read before the Section on Diseases of Children at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

To learn something of the size of the problem or the relative proportion of children with heart disease in the schools, seventeen schools were selected in the vicinity of the school at Eighth Street and Avenue B on the lower east side, and during the period of study there have been registered in these schools 44,000 children. The principals and teachers of these schools have referred to us all children in class and school having, or suspected of having, any cardiac defect, for examination and disposition. The number of children examined has been 946, and they have been classified according to the method adopted by the Association of Cardiac Clinics (Table 1). Of this number 403, or 42.5 per cent., have been found to come within the classification, and 543 were not found to have heart disease. Of the 403, 228, or 24.25 per cent. of 946, or 56 per cent. of the 403, had signs of organic heart disease. Thus, from the children registered in the area, we found on examination less than 1 per cent. to come within the classification adopted by the clinics, and only slightly more than 0.5 per cent. to have organic disease. One hundred and sixty-three of the children were found to have signs, which, while abnormal, were not believed to be due to disease. The sum of the Classes I to IV is 391, or 0.89 per cent. of the children attending school in the area. Comparing the group in Classes I, II and III with those in IV, it is apparent that for every three children having organic heart disease there are two who have signs which can be explained by accidental signs. The occurrence of infections, such as rheumatism and chorea, has been considered in arriving at a decision as to diagnosis. The children in Class IV have been followed up to learn whether any case develops signs of organic disease. Of necessity it will require several years to know what alterations or corrections in this respect may have to be made in our history sheets.

The parents of 125 children who have been segregated because of organic heart disease were questioned carefully in detail as to the occurrence of infectious diseases (Table 2). In this way it was found that in these

TABLE 1.—CHILDREN EXAMINED, ARRANGED BY CLASS, SEX AND AGES

| | Class I | | II | | III | | I-II-III | | IV | | V | | Non-classified | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Boys | Girls | Boys | Girls | Boys | Girls | Boys | Girls | Boys | Girls | Boys | Girls | Boys | Girls |
| 6-7 | 7 | 3 | 3 | 4 | 13 | 9 | 23 | 16 | 23 | 14 | 0 | 0 | ... | ... |
| 8-10 | 2 | 0 | 6 | 11 | 14 | 28 | 22 | 39 | 27 | 35 | 2 | 3 | ... | ... |
| 11-13 | 8 | 8 | 7 | 16 | 23 | 26 | 38 | 50 | 19 | 20 | 2 | 4 | ... | ... |
| 14-16 | 0 | 2 | 3 | 2 | 10 | 13 | 13 | 17 | 4 | 11 | 0 | 1 | ... | ... |
| Total | 17 | 13 | 19 | 33 | 60 | 86 | 96 | 122 | 73 | 90 | 4 | 8 | 266 | 277 |
| Gross by class | 30 | | 52 | | 146 | | 228 | | 163 | | 12 | | 543 | |
| Gross | | | | | | | | | | | | | 946 | |

children tonsillitis occurred in 64 per cent., rheumatism in 45 per cent., measles in 36 per cent., pneumonia in 18 per cent., diphtheria in 17 per cent., chorea in 14 per cent., pertussis in 13 per cent., and scarlet fever in 12 per cent. Influenza, bronchitis, typhoid, nephritis, jaundice and otitis media occurred in a few isolated instances. To learn how this history incidence of infectious disease compares with that of normal, well children we obtained the detailed history of 300 normals. In this group (Table 2), tonsillitis occurs in 18 per cent., or only two-sevenths as frequently as in the cardiac; rheumatism appears in 5 per cent., or one-

ninth; measles occurred in 58 per cent., or one and two-thirds more often; pneumonia in 5 per cent., or one-third as frequently; diphtheria in 9 per cent., or one-half as frequently, while chorea appeared only once. Pertussis occurred in 33 per cent., or two and one-half times, while scarlet fever occurred in 5 per cent., or one-half as often. Thus, in the cardiac group tonsillitis, rheumatism and chorea had a distinctly higher incidence, while measles and pertussis occurred much more frequently in the noncardiac group. Such a very high incidence of measles and pertussis in the

TABLE 2.—COMPARISON OF HISTORY OF OCCURRENCE OF INFECTIOUS DISEASE OF CARDIACS AND NONCARDIACS

| | Cardiacs | | Noncardiacs | |
|---|---|---|---|---|
| | Number | Per Cent. | Number | Per Cent. |
| Tonsillitis | 82 | 61 | 55 | 18 |
| Rheumatism | 57 | 45 | 16 | 5 |
| Measles | 45 | 36 | 176 | 58 |
| Pneumonia | 23 | 18 | 14 | 5 |
| Diphtheria | 21 | 17 | 27 | 9 |
| Chorea | 18 | 14 | 1 | .. |
| Pertussis | 17 | 13 | 100 | 33 |
| Scarlet fever | 16 | 12 | 14 | 5 |
| Influenza | 2 | .. | 17 | 5 |
| Bronchitis | 8 | .. | 0 | .. |
| Typhoid | 2 | .. | 0 | .. |
| Nephritis | 2 | .. | 0 | .. |
| Jaundice | 1 | .. | 0 | .. |
| Otitis media | 1 | .. | 0 | .. |
| Chickenpox | 0 | .. | 17 | 4 |
| Polyomyelitis | 0 | .. | 4 | 1 |
| Total | 125 | | Boys 164, Girls 133 297 | |

well group, who live under similar conditions in the same section of the city, suggests that damage to the heart may act as a partial isolation to prevent exposure and infection.

The physical examination of the children has been made with bared chest, the child standing and then lying, and the heights and weights were recorded on admission. Decayed teeth were present in 90 per cent. of the cardiac group. Enlarged tonsils and cervical glands have been present in 93 per cent. of the same group. In this group sixty-one tonsillectomies have been done at the New York Post-Graduate Medical School and Hospital without the occurrence of any untoward accident. In the same group, twenty-three were found to have errors of refraction and to need glasses. Only one child has given a positive Wassermann reaction, and in this instance the parents, too, gave a positive reaction. The department of health tested sixty-seven of the group for diphtheria and found eighteen to give a positive Schick reaction. All were given the toxin-antitoxin by Dr. Abraham Zingher.

To facilitate the care and management, the children were classified according to the method adopted by the Cardiac Clinics (Table 3). Preference for segregation has been given to Class II (Table 4), since this group may possibly become Class III, or with improvement may become Class I. It is recognized that the restrictions cannot be hard and fast, since there are individual exceptions. We have transferred back to their original schools a number of cases that have so markedly improved as to be fit to return to the regular school—they have become Class I cases. A few potentials were accepted because of recent chorea or rheumatism. It has been observed frequently that minor infections decrease the exercise tolerance of the heart of these cardiac children very promptly, and we are convinced that cardiac children should not be permitted to exercise while they have increased temperatures. For an exercise test the standard for ordinary exertion of children[1] of a rise of 30 feet in twenty seconds has been accepted for the purposes of this study. Grouped according to valvular defects (Table 5), mitral disease is accountable for 77 per cent. of the cases, while aortic cases alone are only 7 per cent.

Acquired valvular disease account for 85 per cent. of the cases, while congenital defects account for 14 per cent.

The children arrive between 8:30 and 9 a. m. and receive a cup of hot water containing half a bouillon cube, and remain at the school until 4:30 or 5 p. m. The luncheon is supplied for a very small fee (from 5 to 10 cents). The temperature and pulse are recorded each day, and general observation is made of each child soon after arrival in order to prevent the child taking part in any exercises, if fever is present or there is evidence of any infectious disease. When fever, noticeable fatigue or apathy are found, the child is sent to a quiet room where more careful observation may be made. The child is not sent home until late in the afternoon, as it is believed that he will receive better care, and a definite diagnosis may be obtained before night. If the increased temperature persists when the child is dismissed at night, the child is instructed to remain in bed at home the next day until the nurse can call and learn the condition. Word is sent also to the parents to see that the instructions are observed.

The luncheon at the school is followed by a rest period of one hour, and then the school work is continued until 3 o'clock. From then on the physical exercises and recreational and vocational teaching occupy the time until dismissal.

The eighty-two children following this regimen had their attendance improved 13.5 per cent. over what it had been in the preceding term. This means practically three school weeks. The control group attending schools in their usual neighborhoods showed improvement of 5 per cent., or one school week, over the preceding term. The segregated group, therefore, showed an attendance of 8.5 per cent. more than those attending the regular schools. It would seem justified to infer that weather conditions could not account for all the improvement in attendance of the segregated group, since those attending outside schools improved only 5 per cent.

TABLE 3.—THE CLASSIFICATION OF PATIENTS ATTENDING A CARDIAC CLINIC

CLASS I.—Patients with organic heart disease who are able to carry on their habitual physical activity.

CLASS II.—Patients with organic heart disease who are able to carry on diminished physical activity.
A. Slightly decreased.
B. Greatly decreased.

CLASS III.—Patients with organic heart disease who are unable to carry on any physical activity.

CLASS IV.—Patients with possible heart disease. Patients who have abnormal physical signs in the heart, but in whom the general picture or the character of the physical signs leads us to believe that they do not originate from cardiac disease.

CLASS V.—Patients with potential heart disease. Patients who do not have any suggestion of cardiac disease, but who are suffering from an infectious condition which may be accompanied by such disease; e. g., rheumatic fever, tonsillitis, chorea or syphilis.

The social worker by her tact and sympathy can inspire the confidence of the children and parents and

1. Wilson, May G.: The Equivalent of Ordinary Exertion, J. A. M. A. 76: 1213 (April 30) 1921; Exercise Tolerance of Children with Heart Disease, ibid. 76: 1629 (June 11) 1921.

gain a high percentage of cooperation and, undoubtedly, to her efforts is due a large share of the improved attendance.

The children and parents have been taught, by personal talks with the social worker and at monthly meetings, the value of simple foods which have growth-stimulating constituents. Regular habits and clean personal hygiene have been encouraged by small prizes and diary keeping, which have been incorporated as part of the school work. In this way, too, it has been possible to check up on the habits of the children and family—food, recreation, discipline of parents over children—as well as the child's compliance with instructions. The loss of a pound or two of weight is often accounted for in this way, as the children tell of helping the family move to new quarters, or of doing the cleaning for the week, or of caring for the baby. It is often in the work of the cardiac child about the house that the explanation of the slump in its condition may be found. Occasionally the games and excursions into the country have been too fatiguing, or the retiring hour has been too late.

To diminish the probability of "catching cold" on wet days, each child was required to have an umbrella, a pair of rubber overshoes and a pair of good stockings, which were kept at the school, so that on arrival in the morning, if their stockings were wet, they could exchange them for the dry.

The children (eighty-two) in the term February-June, 1920, made an average gain of 4 pounds, which is about the average expected gain for the age.

The first period in the afternoon following the school work is devoted to graduated physical exercise, in which all the children other than Class III take part for a shorter or longer period. Some of the children can exercise for only a few minutes, while others can take the whole period of thirty minutes. The type of movement is selected so as to require a larger group of muscles and a greater degree of exertion as the time elapses. The reasons for the adoption of exercises are

TABLE 4.—CHILDREN ATTENDING THE SCHOOL GROUPED BY CLASS, AGE AND SEX

| | Class I | | Class II A | | Class II B | | Class III | | Class IV | | Class V | | Totals | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Boys | Girls | Boys | Girls | Boys | Girls | Boys | Girls | Boys | Girls | Boys | Girls | Boys | Girls | |
| 6- 7 | 2 | 0 | 4 | 6 | 2 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 10 | 6 | 16 |
| 8-10 | 2 | 3 | 7 | 15 | 2 | 1 | 3 | 1 | 1 | 2 | 2 | 0 | 17 | 22 | 39 |
| 11-13 | 3 | 7 | 12 | 16 | 2 | 3 | 2 | 1 | 0 | 6 | 1 | 0 | 20 | 33 | 53 |
| 14-16 | 0 | 0 | 5 | 6 | 2 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 8 | 9 | 17 |
| Totals | 7 | 10 | 28 | 43 | 8 | 5 | 7 | 2 | 2 | 9 | 3 | 1 | 55 | 70 | 125 |
| | | | Boys 36 | | Girls 48 | | | | | | | | | | |
| | 17 | | 84 | | | | 9 | | 11 | | 4 | | 125 | | |

many; and although the time actually consumed per day is not great, yet one notes definite improvement in the children as they become proficient. The heart beats more slowly, and their breathing is not accelerated to such a degree by the ordinary exertion of walking. The grace of movement and posture of the child become very much improved. The children are much more alert, and respond with precision in movement and without awkwardness. Games and dancing with supervision are taught so that the children will have some knowledge of what they may do and learn when to stop, without having to have the verbal prohibitions so frequently heard. The effort is to teach such games and avocations as to interest the child and afford a familiar recourse when out of school, as well as after graduation.

The statement is often heard that collecting together a group of patients with heart disease is very depressing to them and has a distinctly bad effect on them; but I am, and I believe you would be, convinced that this is not the case with these children. Their outlook on life is much happier now than it was, and they enter into their undertakings with enthusiasm, as they feel that they can yet do something, though they may be handicapped. The parents and teachers, too, have a distinctly better attitude toward the care of the children, as they are thinking of the things which they may teach the children to do instead of denying them all enjoyments. The philosophy is one of teaching them to do within their capacity rather than prohibition from all action. The children are much more alert mentally than when they came to the school.

TABLE 5.—ORGANIC CASES GROUPED BY VALVULAR DEFECTS

| | Boys | Girls | Total | Per Cent. |
|---|---|---|---|---|
| Mitral insufficiency | 52 | 89 | 141 | 61.8 |
| Pulmonary insufficiency and mitral insufficiency | 1 | 1 | 2 | 1.0 |
| Mitral stenosis | 8 | 11 | 19 | 8.3 |
| Combined mitral insufficiency and stenosis | 3 | 11 | 14 | 6.1 |
| | 64 | 112 | 176 | 77.0 |
| Aortic disease | 13 | 3 | 16 | 7.0 |
| Aortic disease and mitral insufficiency | 1 | 3 | 4 | 1.7 |
| Congenital | 13 | 11 | 24 | 10.5 |
| Pulmonary stenosis | 5 | 3 | 8 | 3.5 |
| | 32 | 20 | 52 | |
| Total organic | 96 | 132 | 228 | 99.7 |

## CONCLUSIONS

1. There is a real problem for the school authorities in the child with heart disease.

2. It is primarily a problem for the medical profession—pediatrican or family physician.

3. Careful, daily medical supervision is an essential for any large group of children with heart disease.

4. A practical, functional classification of the children with heart disease is a valuable aid in differentiating individuals or groups and in management.

5. Graduated, physical exercise can be given to children with organic heart disease, improving the action of the heart, carriage and posture of the child.

6. Segregation does not lower the morale of children handicapped by heart disease, but can increase the days of attendance at school and improve their general physical and mental condition.

152 West Fifty-Eighth Street.

## ABSTRACT OF DISCUSSION

DR. WILLIAM ST. LAWRENCE, New York: Dr. Halsey has begun an experiment which will undoubtedly have great influence on the ultimate management of cardiac children in the public schools of New York. He has presented new and interesting facts, and where our work has overlapped, my findings agree largely with those he has given. It would seem, however, that two points deserve further discussion: the exercise tolerance in the cardiac child and the place of graduated exercises in management. In the first group (Dr. Halsey's tables) the children had a normal exercise tolerance (capacity for exertion) and were able to pursue the

lives of normal children. In the second group, the exercise tolerance was diminished to varying degrees and the children suffered excessive circulatory reaction on exertion. This second group is far larger in Dr. Halsey's series than among cardiac schoolchildren generally. This is due, perhaps, to the fact that his children were selected particularly because of the severity of their condition. In my own series, about 70 per cent. of the children with organic disease of the heart have a normal exercise tolerance on admission to the clinic. After some months of management, this group increases to about 90 per cent., and in only few of the remaining 10 per cent. does the exercise tolerance remain so low as to be an important factor in management. Graduated exercises are useful in the management of cardiac disease in children, for they tend to improve posture, carriage, grace and flexibility and to give a sense of security to patients and parents. As a means of increasing the exercise tolerance (where most needed) the results are, however, least dramatic. Under proper care (diet, hygiene, tonsils, teeth, injections, etc.) the exercise tolerance of the cardiac child tends to increase and often becomes normal. When these measures have been instituted and the exercise tolerance still remains below normal, only little help from graduated exercise may be anticipated. This is probably due to the fact that children tend to seek their own exercise level and to operate at that level as differentiated from adults who do not seek their exercise level and usually operate far below it. In the former case, the children tend to exercise themselves, and the problem is one of the regulation rather than the institution of exertion.

DR. HAVEN EMERSON, New York: Dr. Halsey's paper and the reports of the work of his associates make it clear that this new field of preventive medicine, one of the largest, if not the largest, in sight, will always be exclusively in the hands of the practitioner of medicine and cannot in the nature of things come to be an industry of public health agencies alone. If the private practitioner seizes the problem of prevention and control of heart disease vigorously he will not only make the greatest addition to public welfare, but also keep the entire problem in its clinical and preventive aspects in his own control. While the tuberculosis death rate has fallen, the cardiac disease rate remains steadily at about 200 per hundred thousand of population per annum. The cardiac disease deaths are a measure of our failure to prevent infectious diseases and a token of our failure in many lines of preventive medicine. About 1 per cent. of the population has pulmonary tuberculosis, and about the same proportion has cardiac disease. About 10 per cent. of the estimated cases of tuberculosis attend the public clinics. In New York we find that thirty-one tuberculosis clinics and thirty-one cardiac clinics approximately meet the needs of the community. As in an epidemic of infectious disease we do not know its true extent until physicians report many more suspected cases than true cases, so we shall not reach the full usefulness of cardiac clinics until many more patients apply for diagnosis and treatment than really have active cardiac disease. In many tuberculosis clinics, twice as many patients attend for diagnosis as are found to have tuberculosis. This is an ideal state of affairs, and is desirable in proportion to the approach to an ideal in which all persons in the community should have an annual medical examination to determine whether they are as well as they think they are. The medical profession now can, if it has the opportunity, detect cardiac disease before the patient knows he has it. If physicians tell their patients to come for an annual examination they will not only pick up early tuberculosis but early heart disease and obtain the same superior results that have been obtained in tuberculosis by treatment of heart disease in its incipient stage. At present patients often fail to obtain medical care at the clinics until from four to eight years after they have themselves recognized a cardiac difficulty. This is a distinct reproach to the medical profession and is repeating the old experience with tuberculous patients who used to make the rounds of the clinics to find where they could get the most palatable medicine. A cardiac patient must be treated with the same especial clinic supervision which we have found invaluable in tuberculosis, and in this way we can prevent many of the periodic attacks of decompensation through which they pass.

DR. G. D. SCOTT, New York: It is almost impossible to use any one system of treatment in cases of heart disease in children. Judging from twenty years' experience in the east side of New York, the great melting pot of this country regulatory treatment must fall under these heads: In acutely severe cases the children should be put to bed; in the functional, if such exist, chronic or milder cases, the children should be placed in bed only as long as absolutely necessary and only when the positive diagnosis is obscured. It is not necessary to enlarge on the condition of the latter class to guardians or patients, as in both classes cardiophobia may develop. Certain rules are to be observed. The heart is a muscle and is developed as such. Patients with no acute symptoms should enjoy regulated moderate exercise, and natural play is the best form of such exercise. In my mind there are many potential heart cases not founded on diseased tonsils or on rheumatism, nor are they incidental to chorea, but spring from malnutrition and fermentation of animal proteins, potential or true heart cases in children who are not taught the eating of vegetables or fruits. They show distended stomachs, meteorism, constipation or diarrhea. Such children should not be relegated to heart disease classes. The mother or patient should not be made apprehensive in the mild cases. Many patients given a bad prognosis years ago are alive and active today.

DR. C. F. WAHRER, Fort Madison, Iowa: These heart cases are sometimes very serious. They are pitiable, but the patients should not be given up to die. These cases are very hopeful in a large majority of instances, and in some of those which seem absolutely hopeless the patients will make a recovery with a little knowledge and a little common sense and a little hope. If you don't know heart disease, don't call in a general specialist, but call in a man who has some common sense; and if you have nothing else to help you treat these sad cases but that little book on heart disease at the American Medical Association exhibit, do not go to sleep until you know about the heart, and hang on to those patients persistently and conscientiously, because I know that they will live.

DR. HERMANN SCHWARTZ, New York: I think it is due to Dr. Halsey and his associates to explain in a few words just what he is trying to do for the cardiac child in New York City. It is surprising to see the difference, how the child in good circumstances has a better chance for life as contrasted with the child that comes to the various dispensaries in New York City. For several years it was a terrible thing for me to see one cardiac child come after another and all we could do was to send them home. Now we are glad to see that everybody is interested in these children and how to help them. The question is how to do it. We have tried, first, the convalescent home, which was one step. We have too few of them. Now we have cardiac classes in the schools, and these classes, through Dr. Halsey's instigation, have tried to supervise the child all through the day. It is no use to tell these children to go home and tell the mothers to let them rest so many hours. The mothers do not have time, and so the cardiac classes take care of these children from 9 a. m. until 5 p. m., which is a good step. Saturdays and Sundays have been quite a problem with us, and we have not solved it yet. Another thing which we expect to have soon is the branch hospital, the cardiac hospital, as a branch of the large hospitals in the city, where the child in Group 3 of cardiac decompensation may be put and remain for years, and then, if possible, be graduated to the cardiac schools, and then into adult life with a chance to do good work.

DR. ROBERT H. HALSEY, New York: In the classification I gave you will find the classes defined so that by following that description you will acquire the idea as to how much exercise each patient may be able to tolerate. Dr. Scott is wrong when he says that the cardiac should not know he has heart disease. Imparting this knowledge to the patient is one of the important advances in the management of heart disease. The cardiac can do a great deal if you will tell how far he can go and when he must stop. There can be no objection to placing the cardiac under the care of a man who has made a study of it because it may require highly technical knowledge. The fluoroscope has its place and the

electrocardiograph has its place, but the electrocardiogram does not make the diagnosis of heart disease. A cardiac child needs feeding as far as he can take care of it, but you can overfeed. Do not cut out all meat simply because it is meat. Heart failure cases are not to be considered anywhere except in bed. Children are going to school and getting worse every day, and the special clinics keep them out of school until they are strong enough to attend the regular school, or they can be segregated in a special school.

## THE TREATMENT OF INFECTED ABDOMINAL WOUNDS BY THE CLOSED METHOD *

THOMAS J. WATKINS, M.D.
CHICAGO

Some time ago obstetricians, notably Williams, demonstrated that physiologic sodium chlorid solution was preferable to solutions of mercuric chlorid for intra-uterine irrigation in case of puerperal infection. The significance of this observation proved not the relative value of the salts but that antiseptic irrigation of infected wounds was harmful. It was later found that all irrigation of wounds was injurious. This knowledge has become so generally disseminated that douches in puerperal infections have become obsolete in modern obstetrics. These findings were later corroborated by research investigations using control cases, which proved that the use of antiseptics in infected wounds injured and delayed repair; that antiseptics injured the tissues more than the bacteria. It is not necessary to go into a detailed description of this here.

An early study of the acute cases of infection of the fallopian tubes demonstrated that the pus became sterile. Extensive and valuable research corroborated this observation and determined much knowledge of infection and immunity. There seems to be general appreciation of the modern ideas of infection and immunity relative to infections of the various organs of the body, and the treatment has been much modified accordingly. This modification of treatment has not so well extended to the treatment of infected wounds.

The problems involved in the treatment of infected organs and in infected wounds are nearly identical; for example, in cases of acute infection of the fallopian tubes and in cases of infected abdominal wounds, little or no local improvement occurs while fever and leukocytosis exist. When the fever and leukocytosis disappear, which means acquired general immunity, recovery of the local lesion is rapid. There is no more reason for radical treatment of infected wounds than for the radical treatment of acute salpingitis; in fact, there is less danger from the wounds than from the tube, because in the case of the wounds suppuration extends along the line of incision, while in the tube the suppuration extends along the path of least resistance. Traumatic interference disseminates the infection, disturbs the local reaction, delays immunity and repair, and unnecessarily distresses the patient in both cases.

Presence of pus is not so important as was formerly considered. Some infections that do not suppurate are more serious than some in which suppuration takes place. The pus often becomes sterile. The presence of pus produces an autovaccination—a delight to devotees of vaccines, if not of much value to the patient.

Observation of the treatment of infected wounds often suggests a confusion of cause and effect, the pus instead of infection being mistaken for the disease. The disease is infection; pus, the result of infection. Infected wounds continue to be overtreated as a result of tradition, certainly not as a result of accrued accomplishments in the study of infection and immunity.

### TREATMENT

The treatment, not original, which I am advocating for infection of abdominal wounds is the "closed method:"

1. No sutures are removed until the wound is healed.
2. No drainage material is inserted.
3. No probing or manipulation of the wound is permitted.
4. Moist dressings are kept continuously over the wound as long as it remains reddened or indurated, care being taken not to macerate the tissues excessively.

The moist dressings accomplish efficient drainage. A large amount of drainage will take place through small openings if the discharge is not permitted to desiccate and close the openings. Proof of efficient drainage can be obtained by turning the patient so as to test the drainage by gravity. Drainage occurs through small gapings at the edge of the wound and at times along the sutures. No exception to this treatment is made when intestinal fistulas or sinuses are present. There is no danger of premature closure of the wound at the surface. It is impossible to obtain permanent closure as long as a foreign body remains, which is the condition present in case of fistulas and sinuses.

### RESULTS

I have observed the results of this treatment for some fifteen years. The technic of the treatment is practically the same as was given by me in a paper read in 1907 before the Chicago Medical Society.[1] I have had opportunity to compare the results of the treatment of infected abdominal wounds by the open and closed methods. For some years it had been my custom to remove sutures, establish drainage and actively treat infected wounds as soon as the presence of pus was suspected. The results of the closed method have materially shortened the time required for complete healing of the wound. With the closed method the wound is almost invariably completely closed at the end of two or three weeks from the time of operation. This saving of time results because, when suppuration ceases with the closed method, no wound remains to be closed by granulation or secondary suture. It has been a matter of considerable surprise that the febrile disturbances have seemed to be about the same with the closed and open methods of treatment. An important feature of the closed method is the slight disturbance of the patient, as the treatment occasions no pain, and assurance can be given that the suppuration is of minor importance.

### HERNIA

The most important observation has been the absence of hernia with the closed method of treatment. We have been much surprised at the strong abdominal wounds which we have observed in cases of infected wounds treated by the closed method. In the follow-up work which we have carried on in our office and at St.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* On account of lack of space, this article is abbreviated in THE JOURNAL by the omission of case reports. The complete article appears in the Transactions of the Section and in the author's reprints.

1. Watkins, T. J.: Illinois M. J., September, 1907.

Luke's Hospital, we have encountered no hernias. The experience has been very different in cases treated by the open method, as in these it is exceptional not to find a hernia. The absence of hernias following the "closed method" cannot be attributed to excellence of closure, as we occasionally have the misfortune to have hernias in cases that do not suppurate. The inference is that suppuration diminishes the danger of hernias when the wound is treated by the closed method. If the fascia remains in apposition, infection increases the amount of connective tissue formation and consequently strengthens the union of the wound. We have rather actively pursued this question of possible hernias from infected wounds treated by the "closed method," as the results seem to be too good to be true; but have been unable to find any hernias.

SCARS

The scars that result seldom indicate that the wounds have suppurated.

The increased length of time which patients with infected abdominal wounds have been required to stay in the hospital when treated by the closed method is seldom more than one week.

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## ABSTRACT OF DISCUSSION

DR. RICHARD R. SMITH, Grand Rapids, Mich.: For many years I have followed this closed method of treatment of infected abdominal wounds. It has a distinct advantage over the older method of treatment of removing stitches, freely opening the abdominal wound, and allowing it to heal by granulation. By the closed method of treatment normal convalescence is not distinctly prolonged, the healing of the wound is distinctly shortened, and the ordeal of daily dressings is largely eliminated. However, I have made certain exceptions to this plan of treatment. In cases that do not do well under it, it has been my habit, after giving this method a fair trial, to remove one or two stitches, as few as possible, open up the wound partially, and procure drainage. I do this for two purposes: (1) to prevent a sloughing of the fascia, and (2) to prevent the burrowing of pus along the fascial planes or along the natural lines of cleavage of the abdominal wall. These may otherwise occur in cases in which the bacteria are of such a nature that they cannot be controlled properly by the patient, and in those patients who are in such a plight that their healing power is markedly diminished. Hernias of the abdominal wound, incisional hernias, are after all but partial ruptures of the abdominal wound which have occurred early in the postoperative course, that is, within the first ten days, due to straining, coughing or vomiting. The fascia of the abdominal wall gives way, and there is laid the foundation for the hernia which appears later. There are one or two exceptions. In the first place, the opening up of suppurating wounds, which is avoided by the closed method, is one of the reasons why we have these hernias. And secondly, it may be due to a pronounced sloughing of the fascia, which we avoid in the occasional case just mentioned by draining the wound.

DR. CHARLES T. SOUTHER, Cincinnati: I thoroughly agree with Dr. Watkins. The importance of not opening up these wounds is certainly evident from the results we get in treating cases by the closed method. The danger to the patient from absorption of the fluids and pus accumulating in these wounds is from the supernatant liquid and not from the pus cells themselves. The watery element will escape through an extremely small place, as Dr. Watkins has said. Two years ago I presented the ointment treatment of wounds. This method is exactly analogous to the wet treatment presented by Dr. Watkins. If the wound is not allowed to dry and the pus discharge is not allowed to dessicate, the wound is not sealed up at any time, so that we get a continuous drainage of the supernatant liquid, and this is the only element in the pus which is dangerous, because it has to become absolutely fluid before it can be absorbed. My practice in these cases is to put in interrupted stitches, an inch apart, sufficiently far apart to draw the fat layers together, and in that way there is drainage between the sutures of all the exudate that occurs in the wound postoperatively for the first twenty-four hours. After that there is usually no accumulation, except that which is more or less septic or hemorrhagic in character. If it is hemorrhagic, it will usually find exit through the point of least resistance, which is between the sutures. I do not close the intervening space with clips, except in rare cases, and almost never in the lower abdominal incision. By suturing wounds without drainage and putting on an ointment dressing, I have not had an infection in five years. Necrosis occurs as the result of the primary injury. By keeping the ointment dressing on in preference to a wet one, these patients never get too cold in going about in winter as ambulatory cases.

DR. HUGO EHRENFEST, St. Louis: The difference between the open method and the so-called closed method is not so great as it would seem. It seems that, as a rule, the surgeon believing in the open method, as soon as he has opened the wound widely, draws it together again with adhesive strips. I maintain that I save myself the trouble of bringing the edges together again by preserving broad skin bridges.

DR. GEORGE ERETY SHOEMAKER, Philadelphia: Those who have tried Dr. Watkins' method will find value in it. Of course, there are severe cases in which other methods must be used. The worst infected abdominal wounds which I have had to deal with have been those in which my suspicion was not aroused early enough to lead to a dressing, or in which the resident physician had dressed the wound and had in excess of zeal removed all the sutures and left the wound open. Healing is then a long process. Suspicion is aroused by a continuing temperature elevation in the first four or five or six days, and we are suspicious of what is underneath the apparently healed skin, remove one stitch, make a culture, and with the greatest gentleness let out any fluid present and then apply a wet dressing. I like a few drops of tincture of iodin in a watery solution. When I do that myself I do not get those gapping wounds with the slow healing in which it is necessary to sterilize with surgical solution of chlorinated soda and resuture. Nearly every wound can be saved in this character of infection by this wet dressing method and early drainage.

DR. W. M. BROWN, Rochester, N. Y.: Dr. Watkins said that no drainage material was used; no sutures are removed at all. It takes a lot of courage to open an appendix abscess and close it without drainage. In fact, I doubt the wisdom of that. When I spoke to Dr. Watkins, he said he did put in a soft cigaret drain temporarily. Over thirty years ago I operated on my first pus appendix. I put in three heavy rubber drainage tubes and sewed it up with silver wire, and in spite of the rubber tubes no hernia followed. I have attended this woman in six confinements since then, and she has no abdominal hernia after leaving those three heavy drainage tubes in for three or four weeks. I have in mind a recent case in which there was a postpartum tube infection with a large exudate; and after watching it for more than a month and being convinced that an operation was imperative, I operated and after liberating the adhesions and getting out the tube, I found in the lower portion of the sigmoid an area of about 5 cm. that was gangrenous with a small white area in the center. It was perfectly evident it was going to be a fecal fistula. I put a soft drain in and removed it at the end of thirty-six hours. About forty-eight hours afterward a small amount of fecal drainage came through. The woman is doing well. It seems as though this was a case that must have some drainage.

DR. THOMAS J. WATKINS, Chicago: I am inclined to believe that the danger of burrowing pus is feared more than is justified. I can appreciate that the anatomy in some parts would make the burrowing of pus dangerous — for instance, infections in the hands. This has not occurred in my

experience in the abdominal wall. I agree with Dr. Smith that many of the hernias are probably due to strain from coughing and vomiting, breaking of catgut or slipping of a knot. Dr. Shoemaker emphasized the important part of the treatment of these wounds; that is, to treat them gently. It does not make much difference what you do to these wounds as long as you do not traumatize them with your fingers, your hands or with antiseptics or remove sutures. In reply to Dr. Brown, when I stated that I did not insert drains, I meant I did not insert drains in the treatment of infected wounds. I sometimes insert drains when doing a primary operation. Then if we feel that there is assurance that suppuration is probable insert a cigaret drain and leave it until suppuration occurs or until we are satisfied that suppuration is not going to result.

## RETROBULBAR NEURITIS, SECONDARY TO DISEASES OF THE NASAL SINUSES *

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EL PASO, TEXAS

Owing to the fact that cases of retrobulbar neuritis caused by diseases of the nasal sinuses seldom come to postmortem examination, the pathology is not so well worked out as that in diseases in other parts of the body; therefore, the diagnosis is usually made on symptoms. Though the symptoms are mainly confined to the eye, there is usually such a close connection with the specialities of neurology and rhinology, that the findings should also be in harmony with the teachings of these branches of medicine.

A case presenting itself in its simplest form is that of sudden monocular impairment of vision, varying from partial to total blindness, with a central scotoma for color, combined with a normal fundus. There may be, in addition, one or more of the following symptoms: interference with the cranial or sympathetic nerves located in the orbit, resulting in variation in the size of the pupil; interference with the action of the extra-ocular muscles, or ptosis; exophthalmos, varying from a degree that is detectable only by measurement with an exophthalmometer, up to proptosis, plainly discernible by inspection; swelling of the lids; pain and tenderness in the orbit; engorgement and tortuosity of the retinal veins, with an occasional thrombosis; optic nerve involvement, shown by paling of the disk; neuritis, varying from simple blurring of the edge to the stage of greater elevation, known as choked disk; variation in the field of vision, consisting of enlargement of the blind spot, central and paracentral scotoma for white and color, and contraction of the field of vision. Frequently both eyes may be involved, in which case there is a combination of the symptoms in each. All of these symptoms have been found and reported by men of such recognized ability that there can be no question as to their correctness.

The pathology must explain cases in which pus is found in the sinus and cases in which it is not. It must explain the cases resulting from either tumor or other growths in the sinus. It must explain both the cures and the failures. I have always considered the condition to be due entirely to pressure, either sudden or gradual, still holding the same views that were expressed before this society six years ago, when I reported three cases of this character.[1] In order to refresh your memory, I will review briefly one of the cases which is typical of this disease.

A man, aged 40, a physician, reported at my office within a few hours after having sudden impairment of vision in the right eye, while driving his automobile, forcing him to turn into the curb until he could readjust himself. Vision in both eyes previously was normal. At the time of the examination, the vision of the right eye was reduced to 20/30. There was slight tortuosity of retinal veins; the fundus was otherwise normal; no exophthalmos could be detected by inspection; double vision was not complained of, but was demonstrated by colored glasses; the peripheral field was normal; there was absolute central scotoma for red and green. On prompting, by questioning, he remembered having had a sinus infection twelve years before, but no symptoms indicating nasal trouble since that time. Nasal examination revealed the right middle turbinate tightly pressed against the lateral wall, with no pus present; the Wassermann test, urine examination, and roentgen-ray examination of the sinuses were all negative. Diagnosis was made of retrobulbar neuritis, due to nasal sinus infection.

The patient was told that a nasal operation might eventually be necessary, but he refused to consider it. While he was under observation for eight days, the vision of the affected eye was reduced to counting fingers at 10 feet, and the pupil became widely dilated, with no reaction to light or accommodation. This condition remained stationary for several days. There was then a spontaneous discharge of about half a teaspoonful of foul smelling pus from the right side of the nose, with immediate improvement in the vision, which returned to normal within a few days with no further recurrence of the trouble up to the present time.

The symptoms found were those of sudden blindness, engorgement of the veins, interference with the action of the extra-ocular muscles, dilated pupil, and central scotoma for color, with a possibility of exophthalmos had measurement been made. The trouble came on so rapidly and was relieved so suddenly that there could be no doubt that it was due to the giving way of the orbital plate of one of the sinuses, producing pressure on the contents of the orbit, the pressure gradually increasing up to the time when there came a spontaneous discharge from the sinus through the natural opening into the nose, resulting in complete recovery. Other cases of similar character since that time have confirmed the opinion originally expressed.

As I see it, the pathology is based on two factors: primarily, the infection of one or more of the nasal sinuses, usually the posterior, with interference with drainage through the natural opening caused by anatomic obstructions or swelling of the soft parts. This condition may exist for many years without the knowledge of the patient, the result of which is the thickening of the mucous membrane, the development of periostitis; osteosclerosis, or thickening of the bone; osteoporosis, or rarefaction of the bone, being in fact that condition found in other parts of the body, termed osteomytlitis. Rhinologists classify this as hyperplasia.[2]

The second factor is the sensitization of the tissues of both the sinus and the orbit by the bacterial proteins, producing an allergy resulting in a localized anaphylactic reaction each time the individual comes in contact with a fresh infection of the same bacteria in the nose, and possibly in other parts of the body. For that reason many of these cases give a history of attacks resembling hay-fever, or acute coryza, shortly previous to the eye trouble. Add to this the variation from the normal anatomy of the nasal sinus (or, as Sluder

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Stark, H. H.: Sudden Blindness Due to Suppuration of the Accessory Nasal Sinuses, J. A. M. A. 65: 1513 (Oct. 30) 1915.
2. Wright, Jonathan, and Sluder, G.: Concerning Some Headaches and Eye Disorders of Nasal Origin, 1918.

aptly puts it, "if there is a normal anatomy of the nasal sinus"), which brings the diseased cavity in closer proximity to the optic nerve, and we have the factors necessary to produce all the symptoms found in cases of this type of retrobulbar neuritis. We are therefore not dealing solely with a localized process, but with one depending in certain ways on systemic changes. The pressure may be of two kinds, sudden, as illustrated in the case just reported, or gradual, owing to a low grade cellulitis, produced by repeated localized anaphylaxis.

That the condition is caused by pressure is borne out by Bordley's [3] experiments in producing similar symptoms by packing the sphenoid with cotton.

In considering this pathology, we must remember that milder types, without the classical symptoms of retrobulbar neuritis, may be present, and that the other extreme may also occur, in which there is a localized infection in the neighborhood of the nerve which may subside or produce anorbital abscess or meningitis.

The diagnosis of these cases should be considered from two angles: the symptoms of the eye, and the pathology of the nose.

The eye symptoms are the first to call attention to the trouble, and as they are more pronounced and alarming to the patient, the oculist usually makes the diagnosis. I have always felt that a study of this disease should be made primarily from a monocular point of view, as the diagnosis is then more simple, leaving fewer diseases to be eliminated in the differential diagnoses. Having mastered the monocular condition, we can more readily apply our knowledge to those cases in which both eyes are affected, or in which one eye is affected from an involvement of a sinus on the opposite side.

The diagnostic symptoms depend to a large degree on whether the involvement of the nerve is slow or sudden. Where there is a sudden involvement, the symptoms are usually so pronounce dand numerous that the diagnosis can be easily made. Where there is slow development, the problem is more complicated.

No less an authority than Fuchs [4] reports a recovery from a monocular blindness, following a nasal operation, in which the diagnosis was made on central scotoma for color alone. It seems to me unwise to base the diagnosis on one symptom without a more than ordinarily careful search to exclude other diseases. However, central scotoma for color is of primary importance in making the diagnosis. Next in order is enlargement of the blind spot. The fact that enlargement of the blind spot is found in nasal diseases without any other eye symptom is, to my mind, simply added proof that it may be the first symptom present, without coming to the knowledge of either the patient or the oculist. The most convincing symptom when combined with others is that of exophthalmos, for in no other disease of similar nature have we this symptom reported. It is undoubtedly due to an increase of the orbital contents, caused by an excess of blood in the vessels, as the result of a localized anaphylaxis and interference with the return flow in the veins. This symptom is frequently overlooked, owing to lack of investigation, but it is a very important one, especially in cases of slow development. Interference with the action of the extra-ocular muscles is also an important symptom, frequently overlooked unless given special attention. Interference with the pupil, particularly if sudden, is of great importance. There is no question in my mind that many cases have slight interference or variation in the size of the pupil, which goes undetected.

In making our differential diagnosis, we should exclude hysteria, intercranial disease anterior to the chiasm, and especially, in binocular cases, amblyopia from other causes, including tobacco, alcohol, pellagra, brain tumor, syphilis and insular sclerosis. The last named disease shows in 50 per cent. of the cases a central scotoma for color as the first symptom; secondary symptoms appear, according to Oppenheim,[5] as long as fifteen or twenty years later. Many of the symptoms are so similar to retrobulbar neuritis caused by the sinuses that, a number of years ago, I [6] tabulated them for publication, advancing the theory that infection of the nasal sinuses might be one of the causes of insular sclerosis, one being but the advanced stage of the other.

Shortly previous to this publication, Shumway [7] advanced the same idea, and reported a case which apparently proved the theory.

In a study of the pathology of insular sclerosis, Parsons [8] states that "the blood vessels are greatly altered, increased in number, and there is a widening of the lumen of the finer ones. The pathological condition is suggestive of the presence of a circulating toxin as the cause of the disease, but there is no proof that such is the case."

This pathology could be readily applied to retrobulbar neuritis caused by the nasal sinuses, it being the primary stage, with the secondary changes occurring much later.

From a nasal standpoint, we must not expect to find the common symptoms of sinus infection—pus, polypus, history of nasal discharge, etc.—as we are dealing in most cases with a closed sinus; otherwise we would not have the pressure. The deflected septum and middle turbinate tightly pressed against the lateral wall should always be suspected. Both transillumination and roentgenography should be used. The latter, however, in many cases gives little aid in the diagnosis. In White's [9] report, at least 70 per cent. of his cases had negative roentgen-ray findings. Notwithstanding this fact, some of the most rapid and brilliant recoveries were obtained as the result of operation. This may be readily understood when we realize that we are not dealing altogether with a localized condition, but that an anaphylactic reaction can be set up in a sinus whose content is only serous fluid, which cannot be detected by a roentgen-ray examination. In addition, an acute osteomyelitis, even in the long bones, cannot be demonstrated by the roentgen ray in less than twelve or fourteen days. Occasionally we have cases out of the ordinary, in which the differential diagnosis is complicated, unless the usual routine examination is carried out. One of these I will report:

A man, aged 34, apparently healthy in every way, reported to me that the vision of his right eye had materially decreased in the last few days. Examination disclosed central scotoma for color, pupil slightly larger than normal, no double vision,

3. Bordley, James, Jr.: Ocular Manifestations of the Diseases of the Para-Nasal Sinuses, Arch. Ophth., March, 1921, p. 140.
4. Fuchs: Case of Eye Disturbance in Accessory Sinus Disease, Lehrbuch der Augenheilkunde, Edition 10, 1905, p. 766.
5. Oppenheim: Text-Book of Nervous Diseases, Edition 5, Part 2, p. 378, 1908.
6. Stark, H. H.: Suppuration of the Accessory Nasal Sinuses as a Possible Etiologic Factor in Multiple Sclerosis, Ann. Otol., Rhinol. & Laryngol. **25**: 710 (Sept.) 1916.
7. Shumway: Acute Axial Optic Neuritis as an Early Symptom in Disseminated Sclerosis, Ophth. Rec. **24**: 385, 1915.
8. Parsons: Pathology of the Eye, **4**: 1346, 1908.
9. White, L. E.: The Diagnosis and Prognosis of Loss of Vision from Accessory Sinus Disease, J. A. M. A. **74**: 1510 (May 29) 1920.

disk elevated 5 D., with the usual venous stasis; otherwise, it was normal. Nasal examination disclosed the middle turbinate tightly pressed against the lateral wall; otherwise it was negative. Roentgen ray, teeth and tonsil examination was negative, with no history of nasal trouble. Venereal disease was denied, and not suspected, as the patient was married, and had a healthy wife and two children. It seemed very clear in my mind that I was dealing with a case of retrobulbar neuritis due to nasal sinus infection. Suction treatment was commenced, and, while no pus was obtained, it produced a decided improvement in the vision. This was continued for two weeks, when, owing to the patient's absence from town for ten days, no treatment was given. On his return his vision had been reduced to counting fingers at a few feet. This again cleared up with suction, but an operation was proposed. This was refused. After continuing the treatment for a number of days and finding that there was no improvement in the nerve condition, the case was reopened by questioning, at which time it was discovered that six or seven years before he had had a suspicious sore. This was treated by a physician, who assured him there was no possibility of syphilitic infection. A Wassermann test was made which gave a ++++ reaction. The case cleared up in a short time under antisyphilitic treatment, leaving normal vision. To my mind this must have been a case of syphilitic involvement of one of the posterior sinuses; otherwise we could not account for the improvement with suction.

Each year's literature adds greatly to our knowledge of retrobulbar neuritis caused by the nasal sinuses. Judging by the German literature of last year, the question has excited more than ordinary interest in that country. One evening was devoted to the subject by the Vienna Ophthalmological Society.[10] A list of the men discussing it contains many familiar names. The closing discussions were by Hajek and Mueller. Mueller took the position that there was no doubt about the existence of such a condition and that, in cases of negative nasal findings, the rhinologist must act as the agent of the ophthalmologist, the latter deciding when operative procedure should be carried out. Hajek agreed with him, but held that clinical experience had not yet shown, in a scientific way, the connection between the nasal sinuses and retrobulbar neuritis, basing his conclusions on twelve cases which he reported in a subsequent paper.[11] In four of these cases, there was no result after operation; three, he did not consider, as they had not been under observation two and one-half years; one case, with good and lasting result, was followed by involvement of the other side, which was cured spontaneously; one case was followed with improvement after operation on one side, and with spontaneous healing on the other; one case, with great variation in the findings, showed improvement without operation; and one case, caused by mucocele of the sphenoid, was cured by operation. He says that the results following operation are more or less transient and do not indicate clearly that a pathologic condition of the nose is the cause. Two points worthy of note are that Hajek does not consider three cases which are of less than two and one-half years' standing, and, also, that he is not convinced that a pathologic condition of the nose is the cause of the condition. With the latter statement, I do not agree.

In our country, the literature of last year has been enriched by the writings of Ellett,[12] Bordley,[13] and White,[14] the latter reporting twenty-nine of his own cases—by far the largest number reported by one man in any language. His conclusion, based on a study of these cases, is that an early operation is indicated, otherwise there will be great danger of permanent injury to the optic nerve.

Of the three patients whose cases I reported in 1915, one has remained entirely well, with normal vision up to the present time; one had normal vision, but a central scotoma existed for several years, which finally disappeared; the other, a nurse, had a brief attack while serving overseas, which lasted a few days, with a spontaneous recovery, and normal vision at the present time. Since reporting these three cases, I have had nine others, some of them being among a race of people found in our clinics, from whom I was unable to obtain sufficient data to warrant reporting them. The private patients who were treated have dropped out of my observation, so that while the immediate result was good, no definite data could be obtained.

The present method of handling these cases seems to be common to all working along this line—that is, a preliminary nasal, teeth, Wassermann and neurologic examination, with investigation of the nasal sinuses. I myself treat all acute cases for a number of days with the suction apparatus, and, when improvement is shown, this treatment is continued. If there is no improvement, I do not hesitate to advise an operation even when the nasal findings are negative, attention being first directed toward relieving the pressure, with as little damage to the nose as possible, by operating on the middle turbinate. When this is not successful, the suspected sinuses are opened. Undoubtedly, the earlier the pressure is relieved the better the chance for complete recovery. After thorough investigation, if we have excluded other diseases, to risk the danger of an ordinary nasal operation is in no way to be compared with the danger of losing the sight. The result depends to a large degree on the stage of the disease. When the pressure is relieved early, provided previous attacks have not caused an exudate around the nerve, there is a good chance for complete and apparently permanent recovery. When the pressure has been in existence for some time, and especially when there is localized inflammation with exudate, even if it be relieved, we still have to contend with an allergy and subsequent shrinking which may destroy the function of the nerve.

I believe that this condition explains cases of amblyopia in the adult who has vision varying from partial to total loss which cannot be classed as amblyopia ex anopsia due to strabismus. Occasionally we have patients with a history clearly pointing to this pathologic condition. I have recently examined a man, aged 35, who had normal vision in the right eye and 20/100 in the left, and no improvement with glasses. Retinoscopy disclosed a very slight hypermetropia. There was no fundus change except a paleness of the nerve. Both eyes were in normal position. On close questioning, he gave a perfect history of having had a nasal sinus infection a short time before the sight of the left eye became impaired, at the age of 15. His

10. Diskussion über die Frage der retrobulbären Neuritis rhinogenen Ursprungs, Klin. Monatsbl. f. Augenh. **64**: 561 (April) 1920.
11. Hajek, M.: Kritik des rhinogenen Ursprunges der retrobulbären Neuritis, Wien. klin. Wchnschr. **33**: 267 (March 25) 1920.
12. Ellett, E. C.: Optic Neuritis Associated with Disease of Nasal Sinuses, J. A. M. A. **75**: 1805 (Sept. 18) 1920.
13. Bordley, James, Jr.: Optic Nerve Disturbances in Diseases of Posterior Nasal Sinuses, J. A. M. A. **75**: 1809 (Sept. 18) 1920.
14. White, L. E.: Loss of Sight from Posterior Accessory Sinus Disease, Boston M. & S. J. **176**: 891 (June 29) 1917; Retrobulbar Neuritis from Posterior Accessory Sinus Disease, Ann. Otol., Rhinol. & Laryngol. **28**: 793 (Sept. 19) 1919; The Diagnosis of Accessory Sinus Disease Causing Loss of Vision, Laryngoscope **30**: 551 (Sept.) 1920, Boston M. & S. J. **183**: 93 (July 22) 1920; Loss of Sight from Retrobulbar Neuritis Due to Accessory Sinus Disease, Boston M. & S. J. **174**: 790 (June 1) 1916.

condition is undoubtedly the result of a sinus infection, and illustrates the danger from neglected cases. The ultimate result in cases with immediate and apparently permanent improvement must not be allowed to pass out of our minds, as it is doubtful just when the danger of recurrence is past. In addition to this, if my deductions are correct that nasal infection is one of the stages of insular sclerosis, not only the present generation of neurologists, but also the future generation, may be checking our work.

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## ABSTRACT OF DISCUSSION

DR. LEON E. WHITE, Boston: The symptoms mentioned by Dr. Stark are a sudden monocular loss of vision with a central scotoma for colors, in which perimetric charts may prove of great diagnostic value, should the vision be sufficient to permit their being made. If not, the history of the blurring being more pronounced directly in front of the eye, with some ability to see sideways, may prove helpful. In several cases, there was vision for finger movements over a restricted area on the temporal side. The symptoms following involvement of the sympathetic and cranial nerves in the orbit are important. Variations in the size of the pupil and sluggishness, even complete immobility to light, are frequently observed. Interference with the action of the extra muscles, lameness on moving the eye or sensitiveness on pressure should always be considered. While I have noted an occasional case with exophthalmos, others might have been discovered had resort been had to the exophthalmometer. I do not remember seeing cases with swelling of the lids. Dr. Stark says that the pathology must explain cases in which pus is or is not found in the sinuses, and believes the condition to be due to pressure, either sudden or gradual. While this may be true, I have tried to reason what caused this pressure, and it has seemed to me, from what I have been able to get from sections made from the tissues removed from the posterior sinuses and the middle turbinate, that an infective process was invading the regions about the optic nerve or the nerve itself, and that this infection reached this region either by direct continuity from some infective process in the adjacent sinuses or by way of the blood stream and lymphocytes in the form of toxins or bacteria. I agree as to the factors as explaining the pathology—interference with drainage caused by anatomic obstructions and swelling of the soft parts, a condition gradually brought about by changes in temperature and the engorgement caused by many attacks of acute rhinitis. Hyperplasia plus infection seems to account for many cases. His views are new, at least to me, on the sensitization of the tissues of both the sinuses and the orbit by the bacterial proteins producing an allergy resulting in a localized anaphylactic reaction each time the individual comes in contact with a fresh infection of the same bacteria in the nose, and possibly in other parts of the body. A history of attacks resembling hay-fever or acute coryza shortly previous to the eye trouble is given by many of these patients.

DR. GEORGE HUSTON BELL, New York: Toxemia from focal infections is the most important subject before the medical profession today. I hold that focal infections can produce a general toxemia which may have a local manifestation in the eye in the form of uveitis, optic neuritis, choroiditis, retrobulbar neuritis, thrombosis of retinal veins, panophthalmitis and orbital abscess. I saw a case of papilledema of both eyes, associated with a lesion of the kidneys, secondary to an empyema of the sphenoid and ethmoid sinuses and antrum of Highmore. The only symptom complained of at first was a severe headache which the patient could not stand any longer. On examination, I found marked choked disks of both eyes with many hemorrhages. There were nine diopters of swelling in the right eye and eight diopters in the left. The edema and hyperemia were so great that the entire papilla, the borders of the disk, including the scleral and pigment rings, had all disappeared and the whole picture presented the appearance of a solid mound. There were many hemorrhages in the surrounding retina. Blood pressure at this time was: systolic, 200; diastolic, 110; vision in the right eye, 20/30; left eye, 20/30 when first seen. This vision, however, rapidly fell to 20/70 both eyes. Examination of the teeth and tonsils was negative. The Wassermann reaction was negative, and the urine showed albumin, and hyaline and granular casts. The roentgenogram showed cloudy ethmoids, sphenoids, frontals and antrum on the right side. A neurologist suggested brain tumor. On account of the roentgen-ray findings I had the patient's sinuses opened up and drained. The patient began to improve, but irrigation and treatment of his sinuses were kept up. I contended all along that it was a case in which the clinical picture suggested the action of some severe toxin circulating in the blood, produced by the empyema of the ethmoid and sphenoid sinuses. The patient now has normal vision and normal fields for form and an enlargement of the blind spots. The hemorrhages in the retina and the edema of the nerve have gradually been absorbed. The surfaces of the optic disks appear untransparent and dense, and the nerve heads look larger than usual. The fundus of each eye, considering the severe inflammation, presents a beautiful picture, and one that is seldom seen. The patient has returned to work. His urine is normal. This patient had no treatment for his choked disks and kidney trouble, except the removal of the pus from his sphenoids, ethmoids and antrum of Highmore and irrigation of his sinuses.

DR. E. S. THOMSON, New York: One point of practical importance in Doctor Stark's paper I wish to emphasize, concerning the class of cases of which the case cited by Fuchs is representative: central scotoma for color alone, with diminution of vision and no other symptoms whatever. There are unquestionably cases that give no other symptoms. Examination of the nose with the roentgen ray reveals nothing. When the sinuses, the sphenoid particularly, are opened by a rhinologist, he finds apparently normal conditions, and yet after the operation vision returns to normal. A case that illustrates the point is that of a girl, aged 16. Vision of the left eye had been blurring and getting worse for ten days, and when she presented herself she had no perception of light. In the course of routine examination we found that the vision varied a little from day to day, at times showing feeble light perception. We finally opened the sphenoid, and as the case cleared up, which it immediately proceeded to do, a characteristic central scotoma for colors developed. If we had seen her earlier the diagnosis would have been more suggestive. After three weeks her vision was 20/20. The point is that in these cases we must open the sinuses without any rhinologic symptoms. You feel as though you were opening a normal sinus. To open the sinus when you have sufficient grounds for doing so is absolutely the only thing to do.

DR. JOSEPH C. BECK, Chicago: I have not had many of these cases of blindness from this disease, but those that I have had, and in which I have removed the tissues of the posterior ethmoidal and sphenoidal region, showed a non-inflammatory rarefaction of the spicules of the sinuses, without any inflammatory conditions, and roentgen-ray examination verified these findings. If the men who operate in these cases will take these particles to the laboratory and study them with the pathologist, they will get a great deal of satisfaction in realizing that there is no need of our having any infection. The anaphylactic theory is a very interesting one.

DR. HARRY H. STARK, El Paso, Texas: Dr. Bell's case is self-evident and described so fully that there can be no doubt about it. Dr. Thomson's statement regarding the class of cases he has referred to is important from the fact that the blindness may come on so suddenly that there is no chance to determine the presence of a central scotoma until after improvement takes place, at which time a central scotoma can be demonstrated. Regarding Dr. Beck's discussion of the pathology, too much attention has been given to the microscopic pathology and not enough to the gross pathology, which I believe to be due to an osteomyelitis. Both rarefaction and hyperplasia of the bone can be, and to my mind, are produced by an anaphylactic reaction repeated year after year with each fresh attack of coryza, or they may possibly be produced by an infection in other parts of the body.

# MEDICOLEGAL APPLICATION OF HUMAN BLOOD GROUPING

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Although the inheritance, according to definite mendelian principles, of group-specific substances in human blood has been known for ten years, the application of this information to medicolegal questions has not yet been made. It is my object in the present paper to present the possibilities of this practical application and to define the instances in which it can be used.

The term iso-agglutination describes the agglutination of red blood cells by contact with blood serum derived from another individual of the same species. Landsteiner, in 1901, showed that this is a normal phenomenon in all human blood, and reduced its occurrence to a definite law. With regard to the behavior of their serum and red blood cells, all human beings, without regard to race, sex or state of health, fall into one of three groups. In the first group the red cells are not agglutinable by any other human serum, while the serum is found to agglutinate the red cells of all persons not belonging to the first group. In the second group, the red cells are agglutinated by the serum of the first and third groups, while the serum agglutinates the cells of the third group only. The third is the obverse of the second group, its red cells being agglutinated by serum of the first and second groups, its serum agglutinating only cells of the second group. Landsteiner correctly concluded that the phenomena were due to the presence of two kinds of specific agglutinin, of which one was present in the serum of the second group; another in the serum of the third group; and both in the serum of the first group. Landsteiner tested blood of mothers and their new-born children and found that these were frequently different from each other.

TABLE 1.—GROUPING OF HUMAN BLOOD, ACCORDING TO JANSKY *

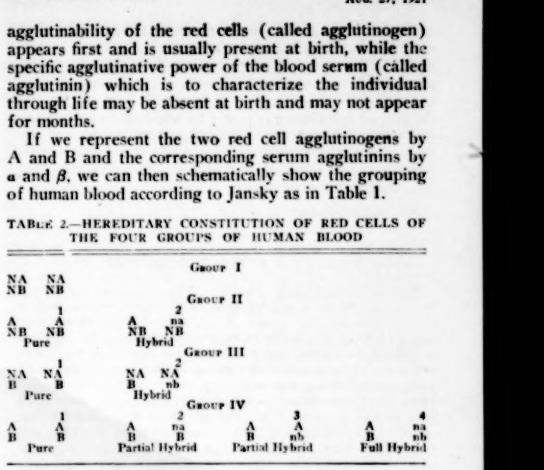
| Group | Serum | Red Blood Cells |
|---|---|---|
| I | Agglutinates cells of the three other groups; contains agglutinins α and β | Inagglutinable; contain no agglutinogen |
| II | Agglutinates cells of Groups III and IV; contains agglutinin β | Agglutinated by serum of Groups I and III; contain agglutinogen A |
| III | Agglutinates cells of Groups II and IV, contains agglutinin α | Agglutinated by serum of Groups I and II; contain agglutinogen B |
| IV | No agglutinative effect; contains no agglutinin | Agglutinated by serum of Groups I, II and III; contain agglutinogens A and B |

* The grouping according to Jansky is logical and has priority. It has been adopted officially by the American Association of Immunologists and by the American Association of Pathologists and Bacteriologists. The groupings of von Dungern and Hirschfeld and of Moss differ only in terminology. The reader must keep this in mind in going over the literature.

Descatella and Sturli the following year confirmed Landsteiner's findings. Among 155 persons examined by them were four who did not fit in any of Landsteiner's three groups, their cells being agglutinated by the serum of all other groups, while their serum contained no agglutinin whatever. This fourth group was, however, only definitely recognized and named as such in 1907 by Jansky. These workers showed that the group peculiarities are permanent throughout life for each individual. They also made the important observation that in embryologic development, the specific agglutinability of the red cells (called agglutinogen) appears first and is usually present at birth, while the specific agglutinative power of the blood serum (called agglutinin) which is to characterize the individual through life may be absent at birth and may not appear for months.

If we represent the two red cell agglutinogens by A and B and the corresponding serum agglutinins by α and β, we can then schematically show the grouping of human blood according to Jansky as in Table 1.

TABLE 2.—HEREDITARY CONSTITUTION OF RED CELLS OF THE FOUR GROUPS OF HUMAN BLOOD




In 1908 I noticed that the groupings were hereditary and followed Mendel's law, but was unable fully to work out the mechanism of inheritance. In 1910 came the important work of von Dungern and Hirschfeld. They showed that the susceptible substance is present in both parents, and occurs in most of the children; while, when a particular substance (A or B) is present in only one parent, some of the children inherit it; when neither parent has a particular one of these substances, no child ever shows it. In other words A as an inherited character is dominant over the character not A, while B is dominant over not B, and the two pairs of unit characters, A and Not A, B and Not B, are inherited independent of each other. Medicolegally then, if A or B is present in a child's blood, one of the alleged parents must possess it.

Let us now turn to consider the mechanism of heredity of these blood properties.

The quality A is dominant to Not A, and B to Not B. The qualities Not A and Not B are not mere blanks, but are definite qualities of red cells associated, respectively, with the development in the serum of agglutinins; and von Dungern and Hirschfeld showed that the inheritance of the paired qualities A and Not A, B and Not B, have no relation to each other. Thus, if we compared A and Not A with Black and White, B and Not B could be represented by some entirely different and independent pair of characters, like Tall and Short.

Now with regard to the inheritance of A and Not A, there are for each individual three possibilities:

1. Either both of his parents are A and the individual is pure A and can transmit to his offspring only the quality A, since all of his germ cells must carry that quality.

2. Or both of his parents are Not A and the individual is pure Not A and can transmit only Not A.

3. Or one parent is A, the other Not A, and the individual is a hybrid, A-Not A, and (according to the mendelian law) his germ cells in equal numbers carry the properties A and Not A, even though the red cells of the individual himself show (because of the dominance of that quality), only A.

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With regard to the inheritance of B or Not B, exactly the same three possibilities exist.

If we represent apparent or dominant qualities by capital letters, recessive ones by small letters, and abbreviate Not A, Not B, to NA, NB, na, nb, we can then represent the hereditary constitution of the four classes of human blood as in Table 2.

It is clear at once that Group I (the most numerous group representing over 40 per cent. of the community) can never be hybrid. Group II (the next most numerous, representing about 40 per cent. of the community) can be hybrid only with regard to its dominant quality A, so that there are two kinds of persons belonging to Group II, pure A-A, transmitting only A to offspring, and hybrid, A-Not a, transmitting these two qualities to offspring in equal numbers. The same is true for Group III (from 12 to 15 per cent. of the community); it can be hybrid only with regard to its dominant quality B. Group IV, on the other hand, (the rarest of the groups, only 2 to 5 per cent. of the community) has four possibilities. It may be pure with regard to both dominant qualities A and B, or pure with regard to one, while hybrid with regard to the other, or hybrid with regard to both.

A detailed analysis [1] of the offspring resulting from unions of persons belonging to the various groups shows that in certain instances the possible kind of offspring are sharply limited. These are tabulated in Table 3.

The unions tabulated in this chart comprise over 80 per cent of all unions, and are the instances in which under certain circumstances deductions of medico-legal value may be drawn.

On the other hand, all unions containing a member of Group IV and unions of II and III may give rise to offspring of any of the four groups.

Suppose, then, that the blood of a child and the alleged parents have been tested, what conclusions can be drawn? If the child's blood is the correct group for the alleged parents, then we can say that the child *could* be their offspring, not that it of necessity must be. But, on the other hand, if the child's group is wrong for the two asserted parents, then one can say with absolute certainty that the child must have a parent other than one of those asserted.

The commonest instance, of course, is that of disputed paternity. Here we can readily tabulate the instances in which it is possible to be sure that the child is illegitimate or is not the child of an asserted father

TABLE 3.—LIMITATION OF OFFSPRING

| | |
|---|---|
| Unions of I and I | give only I |
| Unions of I and II<br>Unions of II and II | give only I and II |
| Unions of I and III<br>Unions of III and III | give only I and III |

(Table 4). It is noticeable that Group I is absent from the third column of Table 4 because a child of Group I can be the offspring of any combination of parents.

The same kind of evidence (Table 4) can be used, either to prove the illegitimacy of the offspring or (circumstances being reversed) to prove the innocence of a corespondent asserted to be the father of a given child.

Likewise, in the rarer cases of disputed maternity or of alleged substitution of one child for another, Table 4 shows the instances in which it can be stated with certainty that the child is spurious; i. e., a child of one of the groups in the third column cannot be the offspring of the parents on the corresponding lines in the first two columns.

TABLE 4.—INSTANCES IN WHICH THE CHILD MUST BE ILLEGITIMATE, OR NOT THE CHILD OF THE SUPPOSED FATHER

| Known Mother | Supposed Father | Child | | |
|---|---|---|---|---|
| I | I | II | III | IV |
| I | II | | III | IV |
| I | III | II | | IV |
| II | I | | III | IV |
| II | II | | III | IV |
| III | I | II | | IV |
| III | III | II | | IV |

In practice, of course, it may be difficult to obtain the consent of all three parties (or at times four), to the blood test. The test can be easily done with a few drops of blood obtained from a painless prick with a small needle. In view of this, and the importance of the questions often at issue, it seems as though some legal means could be devised by which the persons concerned could be compelled to allow the examination at the hands of a representative of the court.

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1. The full data on which these conclusions are based are published in a paper which will appear in a forthcoming number of the Journal of Immunology.

## FOOD ACCESSORY FACTORS IN BACTERIAL GROWTH

### VI. FURTHER OBSERVATIONS ON THE SUBSTANCES NECESSARY FOR THE GROWTH OF PFEIFFER'S BACILLUS *

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Several years ago I [1] called attention to the fact that in the cultivation of hemophilic bacteria (*B. influenzae*) there are necessary two substances, one being a heat stable substance and closely identified with the iron containing pigments of the blood, namely, hemoglobin and hematin; the other factor residing in fresh animal and plant tissues and in many bacteria, including yeasts, blastomyces, sporotricha, etc. The latter substance is more heat labile than the first factor mentioned, autoclaving for fifteen minutes or boiling for a longer time being sufficient to destroy it. The interaction of these two substances is somehow necessary for the growth of this organism. Presumably the second factor in some way renders the iron more available and, in view of the nature and function of this element in life processes, one is tempted to interpret the phenomenon as related to oxidation, and possibly catalytic in nature. In 1907, I [2] pointed this out, basing my conclusion on the fact that very minute quantities of blood (1-180,000) were sufficient to induce growth of these bacteria.

This work was done some years before the recent epidemic of influenza. The strains of so-called influ-

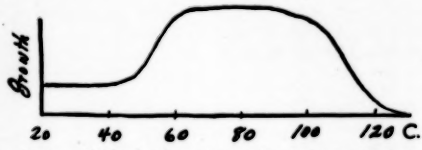
* From the Department of Pathology and Bacteriology, University of Illinois College of Medicine.

1. Davis, D. J.: Food Accessory Factors (Vitamines) in Bacterial Cultures, with Especial Reference to Hemophilic Bacilli, J. Infect. Dis. **21**: 392 (Oct.) 1917.

2. Davis, D. J.: Hemophilic Bacilli: Their Morphology and Relation to Respiratory Pigments, J. Infect. Dis. **4**: 73, 1907.

enza bacilli then used in the investigations by me were isolated from a great variety of respiratory infections, including measles, whooping cough, bronchitis, meningitis, varicella and pneumonia; and since all efforts to demonstrate an epidemic strain of influenza bacilli during the last epidemic failed, and since it is now quite generally conceded that epidemic influenza is not caused by Pfeiffer's bacillus, I think the results obtained with these hemophilic organisms isolated before the influenza epidemic are comparable with the results obtained with similar organisms isolated during or since the epidemic. My own data,[3] as well as the results of many others, do not indicate that these bacilli now are in any way different either in their biologic properties or in their distribution from what they were before the epidemic.

The work referred to above regarding the growth accessory factors in the cultivation of Pfeiffer's bacillus has now been corroborated by a number of workers both here and abroad. Fildes,[4] Thjötta and Avery[5] and Rivers[6] have all found that the growth of Pfeiffer's bacillus depends on the existence of two substances, the one related to the blood pigments being the more heat stable. These workers, too, have generally interpreted the reaction as one related to vitamin




Growth of Pfeffer's bacillus on blood medium heated to various temperatures

activity, though Fildes suggests that the phenomenon centers about the reaction between peroxidase and the blood pigment.

I have recently corroborated my work done several years ago, using fresh strains of Pfeiffer's bacillus.[7] Pfeiffer's bacillus isolated from epidemic influenza, from influenza meningitis, from normal throats or from throats the seat of various respiratory diseases behaves alike in that there is required for its growth, in addition to plain medium (peptone medium is sufficient) the two substances already referred to. In addition, I have noted certain other observations which deserve mention.

When ordinary unheated blood (defibrinated or whole blood) is added to plain mediums, the growth, though definite, is not abundant. When heated to 55 C. even indefinitely, growth also is slight or at times apparently negative. At 60 C., growth is not profuse unless this temperature is applied from two to five hours. If continued for two to three days, no growth will result. At 80 C., growth is profuse if the blood medium is heated from five to ten minutes. By continuing the exposure for from twenty-four to thirty-six hours, the medium becomes valueless unless reactivated by fresh fluid or tissue. At 100 C., a few moments' exposure, or simply bringing the medium to this temperature, is sufficient to allow profuse growth; but exposure for one or two hours will destroy its growth promoting value. At 120 C. (autoclave), a few minutes' exposure of the blood medium will render it valueless. Thus, with increasing temperature the time necessary to obtain a favorable medium becomes less and less, and also with increasing temperature the time necessary to destroy its growth value becomes gradually less. It should, of course, be understood that the growth promoting value of the heated blood can be restored by adding thereto fresh unheated plant and animal tissue extracts, or bacterial or yeast extracts.

It is readily seen that the heat resistance of this second factor may be represented in the form of a simple curve which would gradually descend to the base line at a temperature of about 120 C. A curve representing the growth of the bacilli on blood medium heated to varying degrees would be more complex because of the several factors involved. Roughly it would be represented as in the accompanying curve. The curve does not take into consideration the time element.

The first factor is apparently hematin or a close derivative. Pure hematin (Merck according to Nencki) medium behaves like the autoclaved blood medium. No growth of Pfeiffer's bacillus appears unless the medium is activated by the addition of unheated plant, animal or bacterial products. According to Olsen,[8] hemin behaves in the same way as hematin.

The effect of hydrogen peroxid was tested on the activity of the heat labile factor. For this purpose, fresh filtered carrot juice, which I have found to be an excellent activator, was treated with small but varying quantities of hydrogen peroxid for one hour. Medium made by the addition of this treated juice to autoclaved blood yields very scant growth compared with the controls. On some of the tubes a growth was just visible, but in none did a profuse growth appear. In others there was no visible growth. Similar experiments were made by the addition of small amounts of hydrogen peroxid to ordinary blood medium. The medium becomes bleached with the addition with the addition of increasing quantities of the peroxid. On such medium, growth of Pfeiffer's bacillus is nil or very scant.

In seeking some light on the mechanism of the reaction between these two substances, one may suggest the possibility that the second substance may somehow control or make available the iron in the pigmented portion of the hemoglobin molecule. The question naturally arises, Do vitamins or vitamin-like substances influence or to some degree control the metabolism of other elements in the body, such as phosphorus, iodin and calcium? In the cultivation of the gonococcus, phosphate added to tissue fluids makes a most excellent medium. Dorothy Lloyd[9] has interpreted the favoring action of body fluids in the growth of meningococcus and other organisms as one comparable to vitamin activity in animal nutrition. I raise the question as to the possible action of the accessory bodies on phosphorus as one comparable to the action of the labile tissue substance on the iron containing pigment in the nutrition of Pfeiffer's bacillus. Or does the phosphate in the medium function simply as a body favoring growth through its buffer action?

3. Davis, D. J.: Proc. Inst. Med., Chicago **2**: 142, 1919.
4. Fildes: Brit. J. Exper. Path. **2**: 16, 1921.
5. Thjötta and Avery: J. Exper. Med. **34**: 97, 1921.
6. Rivers: Bull. Johns Hopkins Hosp. **32**: 202, 1921.
7. These results will appear in detail in a series of three articles in the forthcoming issue of the Journal of Infectious Diseases.
8. Olsen: Zentralbl. f. Bakteriol. **85**: 12, 1920.
9. Lloyd, Dorothy: J. Path. & Bacteriol. **21**: 113, 1916.

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Again, McCollum and Simmonds [10] have pointed out the interesting relation that exists between vitamins and phosphorus in the causation of rickets. From their results with rats it would appear that the phosphate ion plays an important rôle in the causation of this disease and perhaps kindred diseases. They point out that the level of blood phosphate is in all probability determined in part by the amount of the fat soluble A available for the needs of the organism. Thus, an interplay seems to exist between the vitamins and phosphorus in the body, a deficiency of either leading to defective nutrition. I merely mention these processes as being possibly analogous to the interplay between the two substances necessary for the growth of Pfeiffer's bacillus. We may be dealing here with a principle in nutrition of fundamental significance in relation to life processes.

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## ENDOSCOPIC REMOVAL OF SAND SPURS FROM LARYNX AND TRACHEO-BRONCHIAL TREE*

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One of the indications of the progress of endoscopy is that its dicta no longer are laid down by one individual, but are the result of the combined experience and thought of numerous students of this branch of surgery. Only through the observations and citations of those interested in this work has this science developed to its present degree of accuracy, and in only this way can its advancement continue. This fact encourages me to discuss a type of foreign body in the air passages which, when considered from its point of frequency, has not received the attention due it.

### NATURE AND DISTRIBUTION OF SAND SPUR

In the family *Gramineae*, commonly referred to as the grass family, there are a number of noxious weeds, and of these none are more troublesome than those belonging to the genus *Cenchrus* (from the Greek κέγχρος, kind of millet). The common names applied to these plants vary in different parts of the country, bur grass, sand bur, cockspur and sand spur being the ones most frequently applied. In Florida, the name in common use is sand spur.

The species which I have seen most frequently as a foreign body in the air passages is *Cenchrus tribuloides*. This is widely distributed, occurring from Ontario and Maine to Florida, westward to Minnesota, and south to Colorado and Texas. In the South, particularly in Florida, it is a common plant, sometimes covering considerable areas with its matted growth. In addition to this species, four others, *C. macrocephalus*, *C. gracillimus*, *C. echinatus* and *C. incertus*, are found in the lower south, and about seven others are found in the tropical regions.

These grasses thrive in sandy soils, and, since they root at the nodes or joints, they frequently form dense mats. They are easily killed by frost and, consequently, are usually annuals; but if weather conditions are favorable they are perennials. They may be found almost anywhere, on lawns, in cultivated fields or in waste places.

The fruits of these grasses are spiny burs, borne in spikes or heads well suited for clinging to anything which may come in contact with them. The spines are very sharp, barbed, sometimes bristly, and, as in *C. tribuloides*, often recurved. When they penetrate any tissue, they are difficult to remove entirely, for, although the main portion of the spine may be taken out, the barbs and bristles are broken off and remain. While it is possible to find matured fruits in some places at almost any time of year, the seed crop is most abundant from August to November. For the identification of *tribuloides*, I am indebted to H. Harold Hume, professor of botany of the University of Florida.

### THE SAND SPUR AS A FOREIGN BODY

The sand spur in the rôle of a foreign body in the larynx and tracheobronchial tree is not a new subject; yet a survey of the literature reveals few references aside from the mere reporting of its extraction and, perhaps, localization. In my experience in Florida, where the sand spur is indigenous and most abundant, it has been the most frequent intruder in the air passages, and in my series of nineteen cases some facts of interest have been observed.

### THE LARYNX AS A SAFEGUARD

As an instance of this is the comparative infrequency of the larynx, with its reflexes, to fail to act as a fender and safeguard to the lungs against this type of foreign body. In this series of nineteen cases, in all but three the sand spur was found to be located somewhere within the boundaries of the larynx. In addition to my own experience, I have endeavored to review every article in which the sand spur is mentioned in both this and foreign countries, as well as to glean the experience of the laryngologists of my own state. The result was that, of eighty-five cases, in only seven had the sand spur successfully run that "gauntlet consisting of the epiglottis, upper laryngeal orifice, ventricular bands, vocal cords and bechic blast," to become a foreign body in the lungs.

Jackson has well said that cough is the watchdog of the lungs, and it might be added after this observation that the larynx as well is a faithful sentinel against this type of foreign body entering the bronchial tree. Another fact of interest which may impress one is that, in the consideration of the etiology of foreign bodies in the air passages the flora of the immediate section of residence is a definite factor.

### CASES IN THE LITERATURE

It is of interest to note in this connection that Jackson, in his analysis of his 882 foreign bodies in the air and food passages, does not mention the sand spur. Furthermore, in my review of the literature I could find a report of only sixteen cases of the sand spur as a foreign body, while in Florida, where the sand spur is so abundant, I have collected statistics which include sixty-nine cases. These statements are made to emphasize a fact which I have never seen mentioned in any article on the etiology of foreign lodgment: that the flora of a locality is a definite etiologic factor of foreign bodies in the air passages.

The accusation that the surgeon is prone to speak of his successes and not mention his failures is relevant

10. McCollum and Simmonds: Bull. Johns Hopkins Hosp. 32; 160, 1921.

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

to the statistics which I have collected relating to this foreign body. In the literature reviewed, there was not a death reported as a result of a sand spur in the air passages, while in reply to a questionnaire sent out I have learned of five fatalities in which it was the etiologic factor. Another fatality will be mentioned in my series of nineteen cases.

### CASE CHARACTERISTICS

The sand spur as a foreign body in the air passages, in this series considered etiologically, presents a few points worthy of mention. Age was a factor to the extent that in all but one instance, that of a woman, aged 22, the patients were less than 12 years of age, seven being between the ages of 8 and 12, and the youngest aged 3 years.

To account for the frequency of this foreign body, I have endeavored to get a definite history from the patients, which is not always an easy matter in children. The interpretation of the histories in the greatest number is as follows: The child notices the sand spur sticking to some part of his clothing or perhaps to his bare feet. With his fingers he attempts to remove it. The bur pricks his fingers, and, childlike, when in pain, he carries his hand to his mouth; the sharp spines of the bur penetrate the highly sensitive mucosa of the tongue, causing a quick cry. The sequel of the cry is a deep inspiration, and the sand spur is drawn in. The sudden inspiration is the etiologic factor.

Of the eighteen cases in which I have removed sand spurs from the air passages, sixteen of the spurs were found to be located at some point in the larynx, and two in the right bronchus. In every case which has come into my hands, the child or parent had made a correct diagnosis, giving the history of inspiring the foreign body, and citing the occurrence of the laryngeal spasm. Those which were laryngeally lodged immediately developed an aphonia, and pain on swallowing, and eight of the patients complained of pain, referring to both ears. Four cases showed a constantly increasing embarrassment of respiration and pending edema.

Those cases in which the sand spur had been in the larynx for more than twenty-four hours presented a picture in some respects resembling laryngeal diphtheria. There was a dirty, grayish exudate elevated above the surrounding mucous membrane. The neighboring area was inflamed, and sometimes edematous. A toxemia was manifested by a temperature varying from 100 to 102 F., pulse ranging from 100 to 120, and a mild cervical adenitis.

### DEDUCTIONS

In my earlier cases, in my endeavor to account for this type of inflammation and to exclude any inherent property in the sand spur, I questioned the analytic chemist and bacteriologist. Prof. Charles LaWall, dean of the Philadelphia College of Pharmacy, informed me that the plant family *Gramineae* was singularly devoid of active chemical principles. As a matter of further interest, cultures were made from the sand spurs found in open fields by Dr. B. L. Arms of the Florida State Board of Health. He reported that no fungi or pathogenic organisms were grown. My final deduction was that this inflammation was due to trauma and invasion of bacteria through the wounds. A microscopic examination of one of these individual spines shows that along its shaft there are numerous small retrorse barbs. I examined several of these spines from the sand spurs which I had taken from larynges and discovered that these small barbs were missing, having been left in the laryngeal mucosa. This, perhaps, explains the prolonged hoarseness which, in some cases, persists over a period of several weeks.

### TECHNIC

My technic in the removal of these foreign bodies from the larynx differs in but one respect from that advocated by Jackson.[1] This consists of the change of the position of the patient's head in relation to the operating table. This has been done for the reason that, often times, it has been impossible to have an assistant who had had the necessary training required when the head and shoulders project over the end of the table. The method which has proved satisfactory in my hands consists of putting the head in extension, with the occiput resting on the table. This insures the extension at the occipito-atloid joint, and gives one a satisfactory view of the anterior commissure, which has been the most frequent point of lodgment of the sand spur.

### SAND SPUR IN BRONCHUS

Of the two cases in which the sand spur had invaded the bronchus, there was little evidence aside from the history of getting the sand spur in the mouth, and a severe but brief laryngeal spasm. One of these patients was seen within two hours after the accident the other within five hours. In neither of these cases did an examination of the chest reveal any well defined physical signs, which was accounted for by the fact that the duration of lodgment had been too short to cause any active inflammatory changes. In one of these cases a roentgenologic study was made which was of no aid in the localization. In each of these cases, with a 5 mm. bronchoscope the sand spur was located in the right main bronchus. Both patients made an uneventful recovery.

While the one fatality which occurred in this series may not be relevant to the title of this paper, its importance in the consideration of the sand spur as a foreign body in the air passages would seem to permit its introduction here.

### REPORT OF CASE

A boy, aged 10 years, resided in the country 7 miles from the nearest physician. Seven weeks before I was called to see him, he ran to his father, saying that a sand spur was sticking in his throat. His father stated that, on looking in the child's throat, he saw the foreign body embedded in the right tonsil. While the boy was struggling, the father made an unsuccessful attempt to remove the sand spur with his fingers; immediately the child seemed to choke, and then had a paroxysm of coughing, lasting but a few moments. He showed no evidence of trouble for the next three weeks, and it was concluded that the sand spur had been swallowed, and the matter was dismissed.

On the twenty-ninth day after this accident, the child developed what was diagnosed by the family physician as a lobar pneumonia of the lower right lobe. On the eleventh day of the pneumonia and the fortieth day after the sand spur was inspired, instead of a subsidence of the acute symptoms, the temperature became higher, with marked remissions, chills, profuse sweats, and a picture of general sepsis. On the sixteenth day, the character of the sputum changed, the patient expectorating a quantity of pus having an offensive

1. Jackson, Chevalier: Peroral Endoscopy and Laryngeal Surgery, St. Louis, Laryngoscope Company, 1915, p. 236.

odor. On the seventeenth day, I was sent for by Dr. J. B. Bennett, who had made a diagnosis of an abscess of the lung secondary to a foreign body. I arrived at the bedside the following morning to be told that five hours previously the patient, in a paroxysm of coughing, had coughed up the sand spur, and with it what was estimated by the parents as 2 ounces of pus. The patient showed a generalized cutaneous emphysema, which appeared at the root of the neck in the intercostal spaces, along the anterior abdominal wall, extending into the scrotum.

The child was moribund, and died within an hour. Unfortunately, a roentgenologic study in this case had not been made, and necropsy was not permitted.

### COMMENT

The case which I have just reported was my first experience with a sand spur in the air passages. On account of its tragic history, it is now recalled in every case which comes to me, and it has caused me to respect this type of foreign body far more than I should had my experience been limited to the eighteen cases in which I have successfully removed spurs from the larynx and bronchi. While the three cases in which the sand spur invaded the bronchi are too few to allow deductions, they may furnish us sufficient evidence for thought. These three cases gave a similar history: the presence of the foreign body in the mouth followed by a choking sensation, which constituted the laryngeal spasm.

In the two cases in which the patients recovered, bronchoscopy was done on the evidence of the history alone, in the absence of any definite physical signs, and in one case with the negative findings of the roentgenologist. The case which proved fatal gave the same history: a bronchoscopy was not done, and the patient succumbed seven weeks later as the result of an unrecognized foreign body in the lung.

### CONCLUSIONS

1. The flora of a locality is an etiologic factor in foreign body lodgment.

2. The larynx is the most frequent point of lodgment of the sand spur when aspirated.

3. The sand spur as a foreign body in the air passages is seen most frequently in children.

4. The sand spur has no inherent property. It should be placed in the category of a foreign body producing only mechanical effects.

5. The study of a series of the same type of foreign body in the air passages, from the standpoint of etiology, diagnosis, localization and pathology, will aid the endoscopist to arrive at conclusions relative to them. Such conclusions are more accurate than those arrived at when a series of foreign bodies of various types and of different physical characteristics is considered.

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## ABSTRACT OF DISCUSSION

DR. RICHMOND MCKINNEY, Memphis, Tenn.: The type of foreign body called a sand spur is probably indigenous to warm, sandy beaches. We have a somewhat similar type of bur, called cockle bur, but it is larger and with more pronounced prickles. The cockle bur is found in the fall, when the foliage is dead, and is blown about by gusts of air. This type of foreign body occurs in the cotton fields, the only beaches that we have being the sand bars along the Mississippi River, and in my experience it always lodges in the larynx—I have never seen one below the larynx. It is usually inhaled when the individual is running through a field, with open mouth. It could not quite fill the glottis, but is caught by the vocal cords and becomes firmly embedded. It is very painful, and exceedingly difficult and disagreeable to remove. As to the method of getting it out: I first cocainize the larynx, then, passing a Jackson heart-shaped speculum, lift the tip of the epiglottis, when the bur will readily be seen. Then, by using fenestrated forceps that will grasp the bur, it can easily be removed from the larynx. This is a very simple technic. In children it is necessary to use a general anesthetic, for it is hard to dislodge the bur, it is quite painful, and the child's struggling renders the case difficult to handle. Then, too, in children one has to be exceedingly careful, because asphyxiation might develop, because of an accumulation of fluid in the trachea. The sand spur is small enough to be inspired into the trachea or a bronchus, and I can see how difficult the problem of removal would be under such circumstances.

DR. CHEVALIER JACKSON, Philadelphia: This is a very valuable paper, not only on the subject of sand spurs, but as an example of the importance of a thorough study of the problems of bronchoscopy for foreign body in the air passages and lungs. The matter of age incidence is interesting. As a rule, foreign bodies occur most frequently in young children, but in this series no case in an infant is reported. I have never encountered a case of sand spur. In the Bronchoscopic Clinic we have had just two cases of cockle bur, one in the larynx; the other was coughed up. Another very important point brought out by Dr. Taylor is the simulation of diphtheria by a foreign body in the larynx. We have had a number of such cases. A child was sent in for a chronic laryngeal stenosis. Antitoxin had been given and a tracheotomy had been done for a supposed laryngeal diphtheria. Dr. Manges, the roentgenologist, found a safety pin that had evidently been in the larynx for nine months.

DR. L. C. INGRAM, Orlando, Fla.: The sand spur grows almost entirely in the South, and is most abundant in Florida. The plant grows from 1 to 3 feet high and resembles very much some of the grass that is cut for hay. In the fall, the hay in the orange groves and on other cultivated land will contain a great many of these sand spurs. When the burs are ripe they come off the stems, and, being very light, a blast of air will carry them about like any other litter from the hay, and in this manner they can be inspired and carried into the respiratory passage. Fortunately, however, the majority of these burs stop in the larynx. The cases that I have had occurred during early September or October. The bur in all the cases except one was in the larynx. The patients were children, mostly of school age. Two boys, while playing ball, each had a bur stick to the hand. They pulled the bur off with their teeth, and before it could be expelled from the mouth an inspiration carried it into the larynx.

DR. E. G. GILL, Roanoke, Va.: The chemical and bacteriologic work done by the author stamps the sand spur as nontoxic, thus acting in a mechanical way in the production of a pathologic condition. I wish to commend the essayist for the excellent judgment exercised in using the bronchoscope in order to establish a diagnosis in two of his cases in which the physical and roentgenographic findings were negative. I feel that in any case of suspected foreign body in the air passages, when the physical and roentgenographic findings are negative, one should not hesitate to use the bronchoscope in order to establish an intelligent diagnosis.

DR. HENRY L. LYNAH, New York: Dr. Taylor brought up the point of dyspnea, a very important one when considered in connection with direct laryngoscopy for diagnosis in children suffering from croup. As to the absence of physical signs and roentgenographic findings, Dr. Samuel Iglauer has mentioned the ballooning of the lung, as has also Dr. Jackson, which may cause compression on the opposite side of the chest. The pathologic condition in this case is on the side which is not so dense in the plate. The diaphragm may also be depressed. Dr. Taylor mentioned one case in which subcutaneous emphysema developed. We have several cases of diphtheritic tracheobronchitis and food foreign bodies in which the same condition developed when no instrumentation had been performed. In these cases the lung on the side of the obstruction keeps on ballooning, air leaks through at the

hilum and follows the deep cervical fascia, causing generalized subcutaneous emphysema. It can occur without producing pneumothorax.

DR. J. B. POTTS, Omaha: In Nebraska and Kansas we have both the sand bur and the cockle bur, although our sand bur is apparently a little different from the bur that grows in the East. The sand bur that we have grows on rather a stiff grass which keeps very close to the ground, being a species of creeping grass. The bur is about the size of a small pea, oval in shape. Its incidence in the larynx has been common ever since the people populated that part of the country. Not long ago one of our general surgeons, Dr. J. E. Summers, called my attention to a paper published twenty years ago in which he reported the removal of six or eight of these burs with a laryngoscope and an old-fashioned curved forceps. We have frequently seen cases of both the sand bur and the cockle bur in the larynx, and since Dr. Jackson brought out his bronchoscope I have been in the habit of removing them with that. My experience is different from Dr. McKinney's in that I have not found it necessary to give a general anesthetic to children in order to remove the bur. In the case of foreign body, I do not believe it is good practice to administer a general anesthetic if one can possibly avoid it.

DR. JOSEPH W. TAYLOR, Tampa, Fla.: Comparing the sand spur of Florida with the cockle bur referred to by Dr. McKinney, it is smaller, but the prongs are much longer and sharper; it sticks to the fingers, and frequently in attempting to pull it off the prong will penetrate the flesh and stick there. One method of getting the sand spur into the larynx is that frequently the older children put the spur between the lips and by means of expiration produce a whistling sound; then they take a deep inspiration and the spur is carried in. During the last few years one laryngologist in one city has had twelve cases, showing the relative frequency of this accident.

## THE BORDERLAND OF RHINOLOGY, NEUROLOGY AND OPHTHALMOLOGY *

GREENFIELD SLUDER, M.D.
ST. LOUIS

The clinical borderland of these specialties has an obvious anatomic basis.

With this common anatomy it is easily understandable that their problems overlap, as emphasized by Dr. Ernest Sachs [1] and Dr. Harvey Cushing [2] in recent papers. They have raised issues of importance to rhinologists, and they agree on the mechanism of choked disk.

Dr. Cushing's texts deal with trigeminal neuralgias and other morbid cephalic sensations. He indicates five painful disorders of the nerves supplying the face which are designated "neuralgic" but which must be distinguished from the more common trigeminal neuralgias, to wit: (1) neuralgias accredited to the sphenopalatine ganglion (Sluder's neuralgia); (2) post zoster neuralgias (trigeminal and geniculate); (3) neuralgia facilis vera (Hunt's neuralgia); (4) painful tic convulsive; (5) neuralgias from tumor involvement. Lastly, he described major trigeminal neuralgia, tic douloureux, for which the gasserian operation is indicated, the differentiation of "major" and "minor" representing degrees. His essay is a careful effort to separate pure tic douloureux from other pain projected into this field. In this he has most generously considered observations which I made on the nasal (sphenopalatine-Meckel's) ganglion, beginning in 1908. The first of these attracted Dr. Cushing's attention, and he most kindly invited me to see some of his cases, in which the result after a perfect gasserian operation was not satisfactory—much pain remaining. They were atypical for him, and strange for me. He outlines these experiences, and gives the warning, "Beware of atypical cases." I, too, have learned this in cases of disorders of the nasal ganglion; and I have learned that there are patients who suffer violently from pain in the head, whose disorders cannot be classified at present. I often see patients who have been through all conceivable treatment. For these reasons, a comparison of ideas will be helpful.

### NEUROLOGIC SYNDROMES

Typical lower-half headache, which Dr. Cushing has alluded to as "Sluder's neuralgia," may be produced in two ways: (1) from irritation of the nasal ganglion, and (2) from sphenoidal lesions irritating the nerves which supply that ganglion, i.e., central to it (the maxillary nerve in the foramen rotundum and the vidian in the vidian canal). It does not require a large sphenoid cell to approach these nerves. These facts should be very clearly borne in mind.

"Lower-half headache," when complete, is pain in and about the eye, the upper jaw and teeth, extending back about the zygoma into the temple, the ear, mastoid, worst usually 5 cm. back of the mastoid, with tenderness to pressure, to the occiput, neck, shoulder, shoulder-blade, arm, forearm, hand and fingers, with often a sense of pepper or mustard burning in the nose. Other manifestations of like cause are hydrorrhea, with sneezing, nausea, vertigo, photophobia, lacrimation, and less often, nodular headache, blepharospasm, asthma, eye pain, as of intense light when no light was present, professional cramp, and rarely, red external nose. These phenomena are seldom seen at once. They may alternate.

Dr. Cushing raises the question, "Why should this syndrome be attributed to the nasal ganglion?" He thinks it rather referable to the adjacent maxillary nerve trunk.

The pathology of most conditions in which our understanding rests on a clinical basis only is open to challenge. No postmortem pathologic material has been secured from one of these cases. When, however, the same symptoms are found repeatedly associated with the same clinical lesion, and are relieved by treatment of the pathologic condition, it becomes accepted that they bear the relation of cause and effect. This argument holds here. In most of these cases an inflammatory lesion exists. The syndrome ("Sluder's neuralgia"—Cushing), known to the surgeon, justifies the experiment of cocainization of the nasal ganglion. Should this relieve the symptoms, injection of alcohol into the sphenomaxillary fossa is usually followed by relief, oftentimes complete, but a second or third may be necessary. Dr. Cushing suggests that this happens by virtue of the alcohol spilling over the maxillary

* Read before the Section on Laryngology, Otology and Rhinology at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

* Owing to lack of space, only the author's abstract of this article is printed in THE JOURNAL. The complete article will appear in the Transactions of the Section and in the author's reprints.

1. Sachs, Ernest: The Importance of More Intimate Cooperation Between the Various Specialists Who See Neurological Cases, Ann. Otol., Rhinol. & Laryngol. 28: 76 (March) 1919.

2. Cushing, Harvey: The Major Trigeminal Neuralgias and Their Surgical Treatment Based on Experiences with 332 Gasserian Operations, Am. J. M. Sc., August, 1920, p. 157; Accessory Sinus Disease and Choked Disk, J. A. M. A. 75: 236 (July 24) 1920; The Rôle of Deep Alcohol Injections in the Treatment of Trigeminal Neuralgia, ibid. 75: 441 (Aug. 14) 1920.

nerve, which might occur. I do not think this, however, because there is never a paralysis of sensation in its distribution. Experiment on the cadaver proved that alcohol with ferric ferrocyanid injected into the sphenomaxillary fossa from under the middle turbinate, and through the sphenopalatine foramen in 0.5 c.c. amounts, was limited to the ganglion area, and did not reach the maxillary nerve. Some years ago, I did a faradic stimulation in two of these cases, and reproduced the pain, although the ganglion was cocainized. Twice lately I have tried this experiment again, but failed. The failures were in patients to be injected for other reasons than "lower-half headache."

Dr. Cushing also advances the opinion that this neuralgic syndrome is pain spilled over from the trigeminus; and reports a case of major tic douloureux (Gasserian Series No. 265), in which there was present this lower-half headache (Sluder's neuralgia—Cushing) at the time of severe paroxysms; and all was relieved by a gasserian operation. This case must be rare, as I have questioned nine neurologists [3] on this point. One of them, Dr. S. I. Schwab, had seen a typical lower-half headache behave as a recurrent stabbing pain of this distribution. He sent the patient to me, and I relieved him (five years ago) by injection of alcohol into the nasal ganglion. He says he has often seen trigeminal tic douloureux cause pain in the back of the neck, shoulder, and arm, and he thinks it is explained by segmental overlapping.

It is impossible for me to accept the trigeminus as the origin of pain in the neck and shoulder when there is no pain in the trigeminus; yet this is frequent in this lower-half headache. The anterior half may be absent, the posterior half severe and be relieved from the nasal ganglion.

The injection of alcohol into it or its vicinity is followed by pain which takes the distribution of the lower-half headache. Charles H. Frazier,[4] reviewing the neuralgias, asks the pertinent question, "Why is the relief from the pain not immediate after the injection?" Sometimes it is, in a few hours; but not as a rule. I do not know enough, as yet, to answer Dr. Frazier's question.

Against the idea of this nasal ganglion neuralgia being phenomena spilled over from the trigeminus is the case of a patient whom I have in charge at present and in whom the gasserian ganglion was removed eleven years ago, at the Mayo Clinic, for tic douloureux, with relief. Three months ago, she began treatment with Dr. W. H. Luedde, St. Louis, for failing vision in the eye of that side. He recognized a choroiditis with a keratitis, and sent her to me for examination. I found a sphenoiditis. She suffers at times a lower-half headache, and at times a sharp pain in that eye, as of intense light, when no light is present.

In another case in which Dr. Cushing had performed a perfect gasserian operation (No. 157), the patient consulted me several years later because of the most intense lower-half headache. She had a severe sphenoiditis. I drilled a 1/8 inch hole into it. A bloody serum was discharged, with relief to the headache. That small hole, however, closed in a few days. The pain returned in full force. She then passed out of my charge and continued to suffer. These cases certainly are not phenomena that spill over from the trigeminus. Nor can they be explained by segmental overlapping.

### LOWER-HALF HEADACHE

The lower-half headache that I discuss comes into the categories of the migraines. It is quite separate from the neuralgias of the trigeminus. They may, however, be associated as the case reported herewith shows:

Mrs. G., aged 65 years, had an ophthalmic migraine since childhood. Fourteen years ago she developed a tic douloureux of the left side, for which Dr. Cushing performed a gasserian operation, with complete relief of the tic. The migraine has not been influenced, and seven years ago she developed a vulgar migraine of digestive origin. These migraines develop rightsided and leftsided, regardless of the gasserian operation. I relieved the ophthalmic migraine by cocainization of the nasal ganglion. I injected both ganglions, Dec. 11 and 20, 1920. Her discomforts were worse for four weeks, but she has since been better: For the last ten weeks she has shown marked improvement; the attacks (ophthalmic migraine) are much lighter and farther apart and for the last few weeks have ceased. The vulgar migraine continues.

In reading the histories of Dr. Cushing's atypical cases I am forced to raise the question as to whether there was not a migrainous element in them, and also whether there were not sphenoidal lesions mixed among them. At the time he showed me his patients, I did not know the story of hyperplastic sphenoiditis. These phenomena are often caused by sphenoiditis of any etiology, by irritation of the nerve trunks that supply the ganglion at points central to it.

After the sphenoid is opened, intrasphenoidal cocainization usually gives relief.

He raises two other questions relative to the nasal ganglion. First, he asks whether there is ever any reason for injecting it; and second, he raises a question of technic.

I have injected it many times with relief of this lower-half headache, sometimes with relief of ophthalmic migraine, asthma, blepharospasm, photophobia, asthenopia and professional cramp. These results are relief, though some of them have stood apparently cured for thirteen years. But they can never be "cured" in the sense of Dr. Cushing's cures of the tic douloureux by the gasserian operation. His cures are absolute by virtue of the fact that he has removed the cause of the trouble; and the break in the nerve tract can never be reestablished. My "cures" cannot rest on this secure basis, for two reasons, to wit: (1) the ganglion cells, according to Dr. Otto May, cannot be destroyed by alcohol injections; [5] and (2) were they destroyed, the nerve trunks that supply them will remain in their canals in the body of the sphenoid, central to the ganglion. Here the rôle of sphenoiditis referred to before, is obvious. So long as these nerve tissues remain in this district they may be affected by a coryza; and they must remain there until the surgeon is able to remove the body of the sphenoid.

Dr. Cushing, in raising the question of technic, states that should there ever be reason for injecting the nasal ganglion, it may be done safer and better from under the zygoma, and decries the transnasal route. Here it should be recalled that the ganglion lies close

3. Drs. F. R. Fry, M. A. Bliss, Given Campbell, William W. Graves, J. Hogue, James C. Gill, Hugh T. Patrick, George W. Hall and S. I. Schwab.

4. Frazier, C. H.: Prog. Med. 1:26 (March) 1921.

5. Dr. Cushing reports a case of accidental injection of alcohol into Meckel's pocket, with resulting paralysis of the entire trigeminus, which is a contradiction of this observation. The trigeminus has never regained function.

to the membrane of the nose covering the sphenopalatine foramen. If one is mindful of this fact, it is difficult to understand why one should not elect to puncture through the foramen with a curved needle, rather than elect the longer route from the zygoma. He mentions the report of a severe secondary hemorrhage following the injection of the ganglion. This must forever be possible, as the internal maxillary artery is close by, and may be wounded primarily, or slough later. In more than 1,000 injections for various purposes I have had severe hemorrhage occur four times. Should the straight needle have been used to puncture under the middle turbinate, it is easily controlled by a small pack under the turbinate where the puncture was made. Once I had a hemorrhage occur following puncture through the foramen. This was more difficult to control, but there was no serious loss of blood. Three times I have seen hemorrhage from two to five days after the injection. Twice it was easily controlled by a pack under the turbinate. In no case was a postnasal pack necessary. Accidents occur also from injection of the maxillary nerve by the transzygomatic route. In one of my tic douloureux cases, in which injection was performed by Dr. Cushing, the needle evidently passed through the sphenopalatine foramen, producing bleeding into the nose. But I do not know how often this happens. This hemorrhage might be the same as that from the transnasal route. The same would seem true for secondary hemorrhage. The choice of technic ought to be determined, advantageously, by the surgeon who is to use it. Were Dr. Cushing to inject my nasal ganglion, I should prefer that he use the transzygomatic route.

He refers to Dr. E. M. Holmes' report of patients, in these categories, treated by transnasal injection of the ganglion. I agree with Dr. Cushing that there are points in his reports that we do not at present understand. Here the protean possibilities of this entire problem should, however, be recalled.

According to my understanding of the headaches at the present time, no investigation can be complete without an estimate of the possibilities of the sphenoid cell in their etiology. I emphasize the nonsuppurative lesions of the sphenoid, central to the ganglion mentioned before. Dr. Cushing has most generously considered the possibility of the nasal ganglion as a source of trouble in his experience with atypical tic douloureux; but he did not mention a possible rôle for the sphenoid cell. In one of his cases (No. 157), the gasserian operation failed, as related before. In his mention of this case an oversight has occurred. He alludes to it as a failure of the sphenoidal operation also to afford a cure, but he did not mention the relief that was obtained by that small, temporary opening. In reading reports of these cases the question of a possible sphenoiditis often occurs to me, and I regret I did not understand it at the time he so kindly showed them to me. One of his cases that I saw in 1909 and failed to understand, seems to me now, as I read his report (Gasserian Series 43), to be a ramification of one of the posterior cells.

Dr. Cushing,[6] in his article, deals with the problems concerning choked disk; and the rhinologic diagnosis, surgical judgment, operative procedures, and disasters encountered in the borderland field. It is a philippic in which he denounces the rhinologist's shortcomings. Further elucidation, however, of our ideas, practices, and experiences, I hope, may mollify his criticism.

He laments the fact that so many patients with meningitis have come to him following nasal operations. This criticism is not only fair but deserved. For years I have felt that such disasters were more numerous than literature records. And I believe that our technic is at fault. Many rhinologists work from in front and below, clearing their way as they go. A better technic is to cut from above and behind, downward and forward. For twenty years I have employed and taught this. I have not yet had a meningitis, nor has one happened in the service of my clinic, nor in the hands of the St. Louis rhinologists who employ this technic. A wider use of it, I think, will be helpful. Six times I have seen the orbit perforated by this method without evil consequences. April 20, 1921, a graduate student apparently perforated the cribriform plate. No unfortunate consequences have followed it. The number of cases in which operation was thus performed is up in the hundreds.

### CHOKED DISK

He also discusses the mechanism of choked disk. Neurologists, for the most part, think that choked disk can be produced only by intracranial pressure, and that it is edema of the disk produced by cerebrospinal fluid pressed out in the sheath of the optic nerve. Opthalmologists recognize what is the same lesion, that certainly arises from other causes also. Dr. Sachs states (March, 1919) that choked disk is, per se, indication for a cerebral decompression. He has since modified this point of view.

In this connection arises the question of hyperplasia of the nasal tissues, especially hyperplastic sphenoiditis. Some years ago, Dr. Jonathan Wright investigated the microscopic pathology of this lesion, as a favor to me. It seemed reasonable to us to argue that this process might and did involve the canals found in the body of the sphenoid; and we advanced it as an explanation of some of the headaches and eye lesions; that is, we think that these canals may be narrowed by the periostitis or osteitis accompanying it. Many times I have had eye cases referred to me with the statement that there is a lesion, usually termed *choked disk*, of from 1 to 8 diopters, and no neurologic or other cause can be found for it. I have been able to recognize in these cases hyperplastic sphenoiditis, often with acute processes added, and have relieved the eye trouble by the postethmoidal-sphenoidal operation.

Dr. Cushing makes a categorical denial of the possible production of choked disk by ethmoidal or sphenoidal lesions without intracranial pressure. He then quotes concerning hyperplasia in the nose, from an article by Dr. Leon E. White.[7] Dr. White's statement, quoted by Dr. Cushing, is in part a quotation from Dr. Jonathan Wright's "Introduction" to my monograph.[8] Dr. Cushing's quotation of Dr. White's text is garbled, and so is Dr. White's quotation of Dr. Wright's text. Furthermore, when my monograph is cited, my text as well, should be quoted.

The purport of Dr. Wright's text is that it is not the hyperplastic lesion so much as the situation of it, and he mentions that it would be difficult to find an

6. Cushing, Harvey: Accessory Sinus Disease and Choked Disk, J. A. M. A. 75: 236 (July 24) 1920.

7. White, S. E.: The Diagnosis and Prognosis of Loss of Vision from Accessory Sinus Disease, J. A. M. A. 74: 1510 (May 29) 1920.

8. Sluder, Greenfield: Headaches and Eye Disorders of Nasal Origin, 1918.

adult in the temperate zone who does not show it in some part. He then states that when it involves the region of the optic or sensory nerves, symptoms arise. My statement bearing on this and Dr. White's question is, that it is very frequent, often without symptoms, but that there are patients of all ages and of both sexes who do not show it clinically in the postethmoidal-sphenoidal district; so that it needs careful discrimination in selecting these cases for surgical interference. So it is to be seen that Dr. Wright's observation is complemented by mine. In other parts of the nose, the hyperplastic lesion does not have the same pernicious possibilities.

On page 259 of that text is my comment on the clinical side of the question raised by Dr. Wright, which also concerns the issue raised by Dr. White, namely, "Ought not all sphenoids be opened for intraocular lesions when no other causative factor is found?" I have thought much on this problem, as the following statement shows. The frequency of headaches (all kinds) without recognizable systemic or organic neurologic basis is well known. The mystery of many eye lesions is also well known. From experience, I am led to the belief that their explanation is to be found in the hyperplastic lesion of the postethmoidal-sphenoidal district to a high degree of frequency. Dr. White's proposal to operate even in the absence of postnasal diagnosis must be taken seriously when all other factors that might be etiologic have been eliminated. I think, however, that investigation on the part of trained, shrewd observers practically always gives a definite decision on the part of the rhinologists. But I can understand that the difficulties in the way of a conclusion concerning this area may be almost insuperable, as I found in a case of leftsided optic neuritis:

A normal boy, aged 14 years, had lost the sight of his right eye by accident in infancy, and Dr. W. A. Shoemaker, who sent the patient to me, removed it as soon as the left eye became affected. His vision went steadily down until he had to be led. Observation of his nose was negative daily, for two weeks, when I, at last, saw an infinitesimal showing of pus from the right sphenoid. Knowing that such lesions are rarely unilateral, I at once opened the left postethmoidal and sphenoidal cells. His eye improved immediately and became normal. The sphenoid contained a little water secretion in which pus could not be recognized. I have utilized this knowledge advantageously in other cases.

Mindful of this experience, I think it difficult to lay down a rule for practice. We know the seriousness of this surgery, and what it means to have it poorly done, as well as the disasters mentioned by Dr. Cushing. One may readily appreciate the argument of Dr. White; but one must realize the responsibility of laying down such a precept. I feel that such a rule of practice should be the consensus of opinion by the best rhinologists.

Dr. Cushing complains of the frequency with which he finds the nose of patients with brain tumor operated on, thinking them to be paranasal cell cases. Dr. Sachs had this in mind, a year earlier. This was timely admonition, and Dr. Cushing's complaint is just. The problems in this borderland, however, are so difficult that only the most accomplished of us can avoid error, and then only by cooperation. Neglect of neurologic investigation in a frank nasal case is the basis for Dr. Cushing's complaint. Nose and brain lesions may be combined. Neglect of nasal investigation in the presence of choked disk may also be basis for his criticism, as a case referred to me eight years ago by Dr. W. H. Luedde shows:

A normal woman, aged 30, had had bilateral choked disk with severe headache. A bilateral decompression had been performed, without betterment. Optic atrophy followed with loss of light perception. I found a bilateral sphenoiditis, and operated. The headache was relieved, and light perception returned. This is her condition now.

A patient in my clinic, three years ago, suffered severe headache. Operation was performed for a sphenoiditis by Dr. M. F. Arbuckle, with relief. The patient had had a decompression operation without relief.

Last year, I operated for a frank sphenoiditis in a man losing vision rapidly, with optic atrophy, and then had a neurologic investigation made, which showed a pituitary enlargement. I preferred to operate at once and have the neurologic investigation later, because I had had the experience of turning over to the neurologist for investigation a patient who was losing vision, and, before he finished his examination, which was elaborate but negative, the patient was blind beyond help, from sphenoiditis.

Concerning choked disk and precepts for practice, the case herewith reported seems interesting:

*History.*—Mrs. H. H. C., aged 23, consulted Dr. W. E. Shahan, Nov. 18, 1914, stating that for five weeks she had had intermittent headache. Three weeks before an oculist prescribed glasses. Two weeks before she had severe pain with swelling of the lids and rightsided photophobia. Two hours later she had a like, but milder attack, on the left side. Since then she had had occasional diplopia, the left eye turning in.

*Examination* (Dr. Shahan).—Vision without glass was: 20/48 right eye; 3/15 eccentric, left eye; esophoria, 20 degrees at 20 feet. Ophthalmoscope showed swelling of right disk, 6 diopters, a few radial hemorrhages on the swollen disk, and a patch of white exudate toward the macula. There was a like condition in the left eye, disk swelling, 8 diopters. My examination revealed double sphenoiditis, suppurative. The roentgen-ray examination was negative; "Wassermann reaction negative or slightly positive?" (C. H. Klenk); neurologic examination (intracranial tumor), negative (M. A. Bliss); urine, negative. A sphenoid operation was performed on the left, November 25; on the right, December 5. December 14, vision without glass was: 20/38 right eye; 20/60 left eye; esophoria 3 degrees at 20 feet. Feb. 28, 1915, vision without glass was: 20/19 right eye; 20/24 left eye; disk swelling, 3 diopters, right and left.

*Course.*—At this time the patient was compelled to go to her home, and has not been able to return. March 7, 1921, her sister reports that she often gets letters from her, and that she is apparently in good health; and that she has two healthy children, born since the above-recorded attack. The vision fields in this case were normal, except for an excessively enlarged blind spot, which diminished progressively during the period of observation. Her vision is normal at present. This patient was examined by Dr. A. E. Ewing also. Both he and Dr. Shahan agreed that it, by all appearances, was a case of choked disk. Neurologic cooperation with Dr. Bliss saved this patient from an intracranial operation which had been urged by surgeons.

I have had like cases referred to me by Drs. Joseph W. Charles, A. E. Ewing, John Green, Jr., William H. Luedde, W. A. Shoemaker and Meyer Wiener, all competent ophthalmologists, in which the neurologic examinations were made by competent neurologists. There was no instance, however, of so great swelling as 8 diopters. Many of these were in observation until complete recovery of the eye.

Such borderland cases, however, may become most difficult of classification, as this case shows:

E. D., a strong, healthy man, aged 24, was referred by Dr. John Green, Jr., and Dr. Louis Hempelmann. My diagnosis was: hyperplastic sphenoiditis with subacute suppura-

tion. Dr. Green's report was: "Seen first Feb. 20, 1914. Right vision 6/5; left vision 6/5. For five years complained of lower-half headaches and temporary blind spells.

"Ophthalmoscope showed: right, mushroom-like swellings of disk with swelling starting abruptly at margin and mounting up; margins very much veiled, veins a little dilated and tortuous. Apex of disk measured by C. D. Refraction about 2 D. so that disk swelling amounted to 4 D. Left same appearance. Disk measured by 6 diopters; retinal level by 2 D.; swelling, 4 D.

"Subsequent observation showed slightly greater swellings in right than left disk; no evidence of choroidal change or of peripheral retinitis. Fields show slight peripheral contraction of right with inversion of red and green fields. On the left form field full, blue field contracted, green field larger than red, but interlaces in three meridians. Conspicuous clinical feature of the case is the momentary obscuration of vision followed by rapid restoration. Patient closely followed, vision never got lower than right 6/8; left 6/5.

"March 6: The day following opening of right posteth-moidal-sphenoidal cells, vision was raised from 6/6 to 6/4 with the right eye.

"March 12: The day following operation on left posteth-moidal-sphenoidal cells, vision was raised from 6/4 missing two letters, to 6/4 missing one letter.

"April 10: Distinct recession of papillary swelling; right apex measured by 4½ D., and left apex by 5.0. From this time neuritis slowly subsided.

"Nov. 6, 1914: Both disks were at level of retina and fairly well tinted.

"Last observation, July 12, 1915: Right and left vision 6/4; fields full. Both disks a little pale, but showing no other evidence of antecedent inflammation."

*Clinical Course.*—Postethmoidal-sphenoidal operation, right side was performed March 5, 1914; left side, March 11, 1914. The eyes began to improve almost at once (see Dr. Green's report). Six days later, lower-half headache (maxillary and vidian neuralgia) began to lessen and later ceased. July 27, 1914, there was headache caused by coryza, and some increased disk swelling and paresis of the facial nerve of right side. This diagnosis was confirmed by Drs. Hempelmann and M. A. Bliss. This condition lasted seven days. Aug. 27, 1914, another exacerbation of the local inflammation began, and was followed by vomiting for thirty-six hours with some headache. Aug. 27, 1914, paresis of the left facial nerve with a right-sided exophthalmos appeared (Drs. Green, Hempelmann and Bliss). Intrasphenoidal observation with Holmes' pharyngoscope during those periods confirmed the diagnosis of acute exacerbation. By the same means it was known to have been absent before and proved to be absent later (after fourteen days) when recovery of the eye, facial paresis and exophthalmos was established.

Last observation by me, April 10, 1915, confirmed Dr. Green's report of recovery, Nov. 6, 1914. The clinical changes in the sphenoid district had subsided to such a degree as to leave it normal clinically.

Dr. Bliss saw this patient at intervals during the period described from March 21, 1914, and watched the subsidence of the optic disks and the clearing of the seventh nerve palsy. He reports, Oct. 7, 1916: "The disks are quite pale, clearly outlined, the vessels normal in fulness. There is no facial palsy now. The patient reports two 'seizures'—one about Sept. 27, 1916, and one several months previous. In neither, did he bite his tongue nor was he convulsed. The pulse rate is 60." Heretofore it was normal.

Oct. 11, 1916: "The pulse is 57—he has no headache, and no nausea. The disks are as on Oct. 7, 1916."

Aug. 11, 1917: "He has continued to have "attacks," but infrequently. The disks are very pale. The pulse rate is 53."

Dr. Bliss was absent from St. Louis during 1917 and 1918, and saw this patient no more. Dr. Hempelmann reported finding a calcification in the right parietal area in September, 1918. Roentgen-ray data in the beginning of the history were negative, according to my memory. My record, however, fails to include this item.

*Comment.*—Drs. Schwab and Sachs in discussing this case have made the suggestion that the case may have been one of multiple brain abscess from the beginning and still is. It is interesting, however, to follow the course of this patient's eye troubles and the relief afforded by the sphenoid surgery, in the presence of the brain abscesses should these prove to exist. The clinical difficulties in the case are self-evident. I have had two other parallel cases, in one of which the patient later died of a glioma of the middle fossae of the skull, the other later (three years) of a cerebellopontile angle tumor.

### CONCLUSIONS

In closing, I wish to emphasize that choked disk is a lesion that seems to be of more than one origin; that the term describes a swelling of the nerve head and is not specific for its etiology; that the lesion secondary to postethmoidal-sphenoidal lesions is in all probability an optic neuritis; and that by the ophthalmoscope it may be indistinguishable from that produced by intracranial lesions.

The question has often been asked, "Why do I not see those nasal ganglion cases which are in your experience not infrequent?" The explanation, I think, lies in the fact that neurologists are rather apt to be satisfied with a diagnosis of neurasthenia; and rhinologists at present are prone to declare the nose negative that does not show a frank sinus suppuration. The dermatologist recognizes many skin lesions that are not suppurative. His philosophy and methods come into service in these nasal diagnoses.[9]

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## OBSERVATIONS ON HEMORRHAGES OF OVARIAN AND TUBAL ORIGIN

### NOT ASSOCIATED WITH ECTOPIC PREGNANCY *

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Hemorrhage into the abdominal cavity from an ovary or fallopian tube is so generally due to the terminal changes in an ectopic ovum that the recognition of other causes for the bleeding has been rather neglected, even though such other causes are known to exist.

There has been developed recently, however, a fairly voluminous literature on the subject, as is indicated by the list of fifty-four titles included in the masterly review of Richard Smith.[1]

Pelvic hemorrhages originating in the reproductive tract independently of extra-uterine pregnancy may have their source in the ovary, or the tube, may result from uterine neoplasms, or rarely from tumors of the round ligament. The last two groups are purely mechanical and traumatic in their nature and are not to be considered at this time.

### DIAGNOSIS OF HEMORRHAGES OF OVARIAN OR TUBAL ORIGIN

Those hemorrhages from the tube or ovary of obscure pathology and unknown etiology are still unsolved problems in gynecology and require further study for their elucidation. The points at issue in this

9. For rhinologic details bearing on the foregoing problems, the reader many consult Sluder, Greenfield: Headaches and Eye Disorders of Nasal Origin, St. Louis, 1918.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Seventy-Second Annual Session of the American Medical Association, Boston, June, 1921.

1. Smith, Richard: Hemorrhages into the Pelvic Cavity Other Than Those of Ectopic Pregnancy, Tr. Am. Gynec. Soc. 45:321, 1920.

connection are the facts concerned with the diagnosis and the details of the pathogenesis of these accidents.

The preoperative differentiation from hemorrhage due to ectopic pregnancy is rarely possible save in those cases in which the virginity of the patient is beyond all question.

The symptomatology and the clinical picture are simply characteristic of sudden intraperitoneal hemorrhage, more or less in amount, and usually associated with acute pain in one or the other iliac fossae, although in a few cases the initial pain is entirely absent, distress only becoming apparent when the irritating effect of the free blood in the peritoneal cavity produces its usually dull, generalized abdominal ache. There follows usually some distention, with signs of shock and severe blood loss, or the sthenic reaction of elevation of temperature, moderate leukocytosis, rectus rigidity, and in general, the syndrome of the "acute abdomen."

The important point in the preoperative diagnosis is that from the personal, as well as the medicolegal, standpoint, a diagnosis of ectopic pregnancy should not be made in cases in which pregnancy should not exist. I feel strongly in accord with Bovée on this point.

Bovée [2] believes that in the presence of hemorrhage of tubal or ovarian origin, when there is not positive clinical evidence of pregnancy as evinced by the finding of a fetus or chorionic villi, one is not justified in making a diagnosis of extra-uterine pregnancy, unless proved by microscopic examination, supporting his contention by a record of twenty-nine cases of supposed ectopic gestation with free hemorrhage from the ovary and tube, in which microscopic evidence supported the diagnosis in but seventeen. This rather extreme view is counterbalanced by the work of Caturani, [3] who examined, from the pathologic standpoint, 100 specimens of suspected extra-uterine pregnancy, finding positive evidences of this lesion in eighty-five, only fifteen proving to be negative.

Fig. 1.—Left ovary (gross specimen): *R*, site of rupture.

The one group of cases of this sort wherein a preoperative diagnosis may be hazarded is that fairly common one in which growing girls, during one of their early menstrual periods, display all the phenomena of intraperitoneal hemorrhage. Three such cases have come under my observation recently, the diagnosis being unconfirmed in all, since no operative interference was practiced and all recovered.

One of these may be cited as typical:

Miss M., a healthy and normally developed girl, had menstruated fairly regularly three times. At the expected date of the fourth menstrual period, she was suddenly seized with a violent pain in the right iliac fossa, with rapidly developing, though moderate, shock and fainting. She rallied from the attack within a few hours, but complained of generalized increasing abdominal pain and tenderness, with distention. The temperature rose to 101 F. and there was marked right rectus rigidity. I saw the patient twenty-four hours after the initial symptoms, with Dr. William G. Shields, Jr., her physician. At first glance the picture was that of an acute appendicitis; but an analysis of the anamnesis made it apparent that hemorrhage into the abdomen was the etiologic factor, and that as the symptoms were distinctly those of a lower abdominal lesion, the ovary was probably at fault. Rectal examination disclosed a tender, doughy mass in the culdesac, and the right ovary was exquisitely sensitive. In view of the age of the patient and the fact that the hemorrhage had apparently ceased, the case was treated expectantly, with uneventful recovery, the clot in the culdesac having been absorbed and being absent to rectal touch some months later.

It is my belief that similar cases are not uncommon and that they rarely result fatally even without surgical interference. The oft quoted case of Scanzoni,[4] reported in 1845, in which an 18 year old girl died as a result of a menstrual ovarian hemorrhage, is not sufficiently accurately described to affect this view, since Scanzoni states that the ovary contained a sac the size of a hen's egg, through a rent in which 6 pounds of blood had escaped into the abdomen. This case, in the light of our present knowledge, is strongly suggestive of ovarian pregnancy.

It is probable that such ovarian hemorrhages are more or less functional errors, that is, an excess of bleeding from the wall of the mature grafian follicle in the adolescent ovary, and that there is no demonstrable morphologic change present in the tissues.

The type of case that gives rise to the greatest confusion is that in which more or less severe hemorrhage takes place from the ovary of mature women and in which the occurrence of extra-uterine pregnancy is a possibility. Here the preoperative diagnosis is extremely difficult, although the history is sometimes suggestive, in that there has been nothing unusual noted with regard to the menstrual cycle and especially in that there is no associated uterine bleeding.

It is my experience that in the great majority of cases of extra-uterine pregnancy the death of the ovum is signalized by the occurrence of some degree of bleeding from the uterus, even though the amount of blood discharged is extremely small. On examination, the usual softening of the cervix is also absent, though this phenomenon is not an essential accompaniment of ectopic gestation, and its absence is not noteworthy. In addition, there are practically never any evidences of the concomitant signs of early pregnancy. These vague and negative features are practically the only aids to differential diagnosis and, needless to say, it is the rare exception that a correct conclusion is reached as to the etiology of the intraperitoneal bleeding.

The loss of blood naturally varies, thus, as pointed out by Novak [5] in his analysis, there was a small amount of hemorrhage in the case reported by Jayle and others while the patients of Burge and Cohn each lost 2 liters of blood and in Peuch's fatal case 3 pints were lost.

The treatment, of course, is immediate laparotomy with oophorectomy or resection of the hemorrhagic portion of the ovary.

### TYPES OF HEMORRHAGE OF OVARIAN ORIGIN

The pathology and the etiology of these lesions are probably their most interesting and puzzling characteristics. In a careful study of the subject, Wolf [6] divides

2. Bovée, J. W.: The Conflict of Clinical and Microscopical Evidence in the Diagnosis of Tubal and Ovarian Pregnancies, Am. J. Obst. **77**: 370 (March) 1918.

3. Caturani, M.: To What Extent Must We Depend upon the Microscopical Examination to Support the Clinical Diagnosis of Ectopic Pregnancy? Am. J. Obst. **79**: 716 (June) 1919.

4. Scanzoni, F. W.: Lehrbuch der weiblichen sexual Organe, Vienna, 1863, p. 402.

5. Novak, E.: Hemorrhage of Ovarian Origin, Bull. Johns Hopkins Hosp. **28**: 736, 1918.

6. Wolf, E. H.: Ueber Hematoma Ovarii, Arch. f. Gynäk. **84**: 211, 1908.

hemorrhages of ovarian origin into three types: (1) interstitial; (2) follicular, and, (3) intrafollicular.

According to Pfannannenstiel, these three varieties are of no practical difference, one type running into the other, and, indeed, all three may be present in the same ovary. Savage[7] divides the sites of the hemorrhage into hematoma of the graafian follicle and hematoma of the corpus luteum. In the first type, he found that in places the wall of the hematoma was lined by a single layer of epithelium which he regarded as the membrana granulosa, lying on a basement membrane, and external to these two layers of tissue which appeared to correspond to the theca interna and the theca externa, both being vascularized, especially the former. The cells of the inner layer showed early lutein formation. Savage also found ill developed graafian follicles near the cavity of the hematoma, and some opening into it. In the second type, hematoma of the corpus luteum, he found that there was an outer shell of ovarian tissue which was for the most part congested. The inner part of the wall showed newly formed fibrous tissue, poor in cells. Near the lining in between the longitudinal strands of the tissue there were blood extravasations, many round cells and many large rounded cubodial cells containing coarse, yellow granules. The nuclei of these cells were relatively small and in many instances seemed to be crowded toward the periphery of the cell.

In contradistinction to Savage, Vovak believes that the original site of graafian follicle hemorrhage is in the perifollicular stroma, and that it only later breaks into the follicle.

All observers are agreed that true stromal hemorrhage is very rare.

The search for an etiologic factor or factors in this connection is most baffling. Whether sclerocystic degeneration or a true fibrosis is at the bottom of the bleeding remains a matter of conjecture. Bovée[8] makes the statement that no other organ in the body is so frequently the seat of hemorrhage as is the ovary, and it follows that there must be a varied and sometimes vague morphologic basis on which to account for the bleeding.

Some light may be thrown on this matter by the study of a case recently coming under my observation:

M. P. (7464 a), white, aged 37, married, was admitted to the Frankford Hospital, Sept. 9, 1920, suffering from generalized abdominal pain of one week's duration, with marked weakness.

The previous history was irrelevant. she had had seven normal labors and no miscarriages. Menstruation had always been regular, until thirteen years before, since when she has had irregular bleeding. Two months before admission she missed a menstrual period, after which a fairly profuse flow took place. For three weeks prior to admission, she had more or less constant uterine bleeding. For the last week, there has been considerable abdominal pain with increasing weakness.

The patient was a well nourished woman without lesions of the chest. Vaginally there was a soft, doughy mass in the culdesac and marked tenderness about the right ovary.

The temperature was 100 F., the pulse rate 90. The blood examination was: hemoglobin 45 per cent., red blood cells, 1,800,000; white blood cells, 6,600. The urine was negative as was the Wassermann reaction.

With these finding, a diagnosis of ruptured ectopic pregnancy was made and immediate laparotomy performed.

Upon incising the peritoneum, there was disclosed a massive hemorrhage of several days' duration, and on inspection, the right ovary was found to be the source of the bleeding, a ruptured hemorrhagic cystic cavity being apparent on its inferior aspect. The tube and the left ovary were normal. The ovary was removed, the patient making an uneventful convalescence.

Microscopically the ovary measured 4 by 4 by 3 cm. The surface presented the usual corrugated appearance of the mature ovary, and on the lower posterior surface was the cavity of a ruptured cystic area, measuring in its collapsed state 4 cm. in diameter. There were several minute hemorrhagic areas scattered throughout the parenchyma of the ovary, and there was no gross evidence of perioophoritis. (Fig. 1).

Microscopically, a section transversely through the body of the organ passing about at the place where the hemorrhage occurred, reveals a distorted organ very rich in blood vessels and poor in ovarian stroma. Numerous hyalin scars are seen and several yellow bodies. One recent follicle is lined with lutein cells. All these bodies, save one, seem normal. The one recent follicle is surrounded by a fresh hemorrhage. Aside from ovarian stroma, the interstitial tissue is relatively loose, except about the blood vessels; and in one place it is decidedly hemorrhagic (Fig. 2). The blood vessels are exceedingly numerous and present very wide walls. They vary in size from arterioles to ½ a Zeiss A lens field. Nearly every vessel shows some subintimal and mesial degeneration (Fig. 3). The degree of this change is not greatly in excess of what might be expected in a late adult ovary; but the excessive number of vessels with their marked degeneration is noteworthy. It is possible that a rupture of one of them is responsible for the interstitial hemorrhage; but examination of several sections fails to reveal a rupture connected with a follicle. One area of marked accumulation of cells of the corpus luteum type are arranged in a form to suggest decidual formation; but there are no true villi present (opinion of Herbert Fox[9]).

Fig. 2.—Low power view of area near the site of hemorrhage: *Bl*, blood clot; *V*, vessels with thickened degenerated walls.

Summarized, the pathologic condition existing in the case cited above is that of marked proliferation of the normal perifollicular vessels with an excessive degenerative arteritis of these vessels, and it is to this point in particular that attention is directed. While a certain degree of arterial degeneration is physiologic in the vascular network embracing the mature follicle, it is my opinion that such physiologic degenerative change is never responsible for massive hemorrhage, and when such accident does occur, some pathologic process must be present, as, in this case, a degenerative arteritis.

That such change can occur without other evidence of ovarian disease is well known, although the direct cause of the arteritis remains obscure.

7. Savage: Brit. M. J. **2**:285; quoted by Hedley, J. P.: Hematoma of the Ovary, J. Obst. & Gynec. Brit. Emp. **18**:293, 1910.
8. Bovée, J. W.: Tubal and Ovarian Hemorrhages, Surg., Gynec & Obst. **28**:117 (Feb.) 1919.
9. Fox, Herbert, Director, Pepper Laboratory, University of Pennsylvania, personal communications.

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Tubal hemorrhage in the absence of ectopic gestation is rare, and though instances are recorded in the literature, few of them withstand close scrutiny. There may be slight bleeding into the tube as remarked by Smith, especially in the presence of acute gonorrheal salpingitis, but even this is uncommon. Bovée quotes two cases, one of Ellsworth's, in which a young girl developed the signs of acute appendicitis on the day before menstruation was due and on operation there was found a notable intraperitoneal hemorrhage with a small laceration of the ampulla and of the tube and without microscopic evidence of pregnancy.

The other case is quoted by Leonard Freeman and is that of an athletic young girl, who, in vaulting over a fence, experienced violent pain in the abdomen and went into collapse. The abdomen was opened and the fallopian tube found torn near its middle. The uterus and other appendages appeared otherwise normal with no evidence of pregnancy. Both these cases are rather vague and do not throw additional light on the subject of tubal hemorrhage.

One case of this sort came under my observation:

An unmarried woman, aged 30, had noted a sharp attack of left sided pelvic pain, one year before admission. The pain gradually subsided, to recur at the menstrual period with increasing severity, each month. There was pain on defecation and slight loss of weight. On examination, a distinct mass was palpated in the left vaginal vault. Operation revealed a greatly distended left tube, the enlargement measuring 5 cm. in diameter, being globular in character and occupying the middle third of the tube. There was a small, organized pelvic hematocele, and the right tube and both ovaries were normal. The left tube was excised, the patient making an uneventful recovery.

Fig. 3.—High power view of area near the hemorrhage, showing clearly the degenerated and thickened vessel walls.

On section of the tube the mass was found to consist of old organized blood clot. Microscopically, there was considerable erosion of the mucosa by hemorrhage into the muscular coat, but no evidence whatever of decidual formation, villi or syncytial cells.

## CONCLUSIONS

The conclusions to be reached from the foregoing observations are:

First, that a diagnosis of extra-uterine pregnancy should never be definitely made until an embryo is found or evidences of decidual and placental formation are revealed by the microscope. This is particularly true in cases in which the social state of the patient precludes legitimate pregnancy.

Second, that when massive hemorrhage takes place from an ovary, there is usually, if not always, to be found some disease of the ovarian blood vessels. Normal ovaries do not give rise to massive hemorrhage.

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## ABSTRACT OF DISCUSSION

DR. EMIL NOVAK, Baltimore: When a surgeon opens the abdomen of a woman and finds it to be full of blood his first thought is of a ruptured extra-uterine pregnancy, and in the overwhelming majority of cases this assumption will prove to be correct. On the other hand, as Dr. Schumann has pointed out, there is a relatively small but well defined group of cases in which no evidence of pregnancy will be found. The most interesting group of cases is that in which the hemorrhage is the result of the rupture of a small follicular or corpus luteum cyst of the ovary, more commonly the latter. Some years ago I reviewed the literature of this subject. I compiled thirty-five cases of extensive abdominal hemorrhage of ovarian origin. Hematomas of the ovary are very common and are almost always caused by hemorrhage into the lumen of an atretic follicle or corpus luteum. Surrounding the wall of each follicular cyst of the ovary is a perifollicular vascular wreath which is the immediate source of the bleeding. In certain cases, however, the hemorrhage is of the perforative type, the blood breaking through the surface of the ovary and causing abdominal hemorrhage of varying degrees. Not a few fatal cases have been reported, and in one case of my own the patient was almost completely exsanguinated. The importance of this form of abdominal hemorrhage is obvious, and its possibility should always be borne in mind. A rather more glaring type of ovarian hemorrhage is not infrequently seen as a rupture of thin-walled ovarian cysts by bimanual examination before operation. All teachers of gynecology who are at times called on to operate after a number of students have examined the patient under anesthesia have observed this occurrence.

DR. ALBERT GOLDSPOHN, Chicago: I have had little difficulty in distinguishing tubal pregnancy from a beginning ordinary spontaneous abortion, because by bimanual palpation the uterus is usually found to be larger and to have a different shape and consistence in the latter than in the former condition. The features which have been most serviceable to me in the diagnosis of tubal pregnancy have been: (1) some irregularity with the last one or two menstrual periods, in being delayed or intermittently prolonged, usually with more or less pain of an unusual character in the affected side; (2) persistence of turgescence and tenderness of the breasts in those women in whom this is a usual feature during menstruation, and (3) local tenderness associated, in most cases, with some soft swelling which is found by gentle and careful bimanual examination, in the affected side. The essayist has well said that the literature records quite a number of well authenticated cases of intraperitoneal pelvic bleeding from a corpus luteum or from a cystic graafian follicle. A notable case was reported by Schauta of Vienna, who did a hysterectomy and left a large ovary with a corpus luteum unmolested. During the next day the patient became sick from internal hemorrhage, which was found to have come from that corpus luteum by reoperation. These hemorrhages emphasize the pathologic nature of large and persistent corpora lutea that are not associated with pregnancy and of the cysts arising from them; likewise of the graafian follicle retention cysts, in which the ovule is usually dead and which cause much more pain than do cystadenomas (true neoplasms) of much larger size. The indication is therefore plain that, when an opportunity is afforded during a pelvic section for other reasons, ovaries should also be relieved of these degenerate formations by resection. In severely sick patients who are emergency cases, without an intelligent history, I have sometimes had difficulty in determining whether it was blood or pus that the pelvis contained. I have then made a transverse vaginal cautery incision into Douglas' pouch. Gauze drainage there for a few days adds much to the postoperative comfort of the patient in the ectopic section case; and it can be made to improve greatly and sometimes to cure

the acutely septic case without a subsequent laparotomy, when the virulence of the infection has died out.

DR. EDWARD A. SCHUMANN, Philadelphia: I regret that my experience based on a study of 400 cases has not corresponded with Dr. Goldspohn's. I find so usual a disturbance of the breasts, minor in degree, associated with the ordinary menstrual period of young women, that a differentiation of that almost physiologic disturbance from the disturbance of the very early weeks of pregnancy is difficult. In Philadelphia, at least, patients usually come to the surgeon within the first five weeks, when the breast changes have not been particularly noteworthy. With regard to the differential diagnosis between blood and pus in the culdesac, we feel that in the majority of cases the diagnosis should be made easily without the necessity for vaginal puncture. I am very loath to do a colpotomy when I suspect blood in the abdomen, feeling that the convalescence can be much better obtained by an abdominal section alone without the added risk of possible introduction of infection by the vaginal route. I have seen few cases in which vaginal puncture is indicated.

## THE SURGICAL TREATMENT OF LESIONS IN THE INTERNAL GENITAL ORGANS

### ASSOCIATED WITH CHRONIC INFECTIONS *

W. BLAIR BELL, B.S., M.D.
LIVERPOOL, ENGLAND

By the expression "lesions associated with chronic infections" I mean to imply those lesions which exist when an infection is chronic in its course; that is to say, when it has been chronic always, as in some tuberculous infections, or when an acute or subacute infection has become what we call chronic because the resistance of the patient is then able to neutralize any generalized toxemia, or because the organisms present have been destroyed. Such a desirable state, or consummation, as chronicity is of immense importance to the surgeon. By the recognition of the great safety of operation in these circumstances as compared with the dangers of extensive interference in acute and subacute conditions, we have completely altered the mortality rate in regard to pelvic infections. I cannot here discuss the ways and means employed to avoid extensive interference in cases that are not chronic; but I think it is important that I should emphasize the desirability of the adoption, especially for teaching purposes, of some definite clinical chronicity test. My own rule is that, if a patient whose temperature has been absolutely normal for some time shows any degree of pyrexia on the evening or day following vaginal or rectal examination, an eradicative operation must not be performed. The patient must be able to stand handling without showing any reaction before such an operation is safe. This is of most importance, of course, when we are dealing with lesions primarily due to streptococcal infection; but, as other infections, especially gonococcal, may be complicated by streptococcal invasion this test should always be applied.

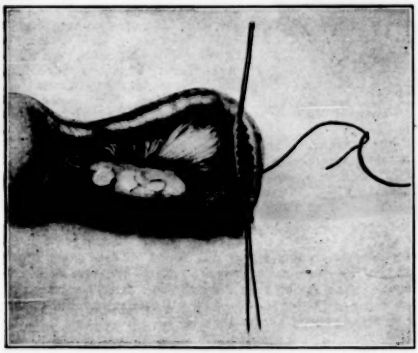

Fig. 1.—Salpingostomy: author's method.

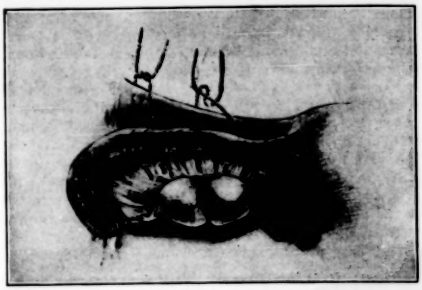

Fig. 2.—Suspension of tube and ovary—author's method—after salpingostomy has been performed.

It is well known to every scientific surgeon that the commoner organisms infecting the internal genitalia produce somewhat different lesions. Yet, at any rate in Great Britain, I do not think that this pathologic knowledge is often enough taken into account when the surgeon is dealing with the lesion present. Sometimes too much is done; more often, perhaps, too little. Albeit in no other surgical enterprise is the essential principle of scientific surgery seen to so great advantage as when properly applied to the lesions associated with chronic infections in the female pelvis: namely, the removal or treatment of diseased structures, without which the symptoms cannot be cured, with conservation, as far as possible, of function.

#### PUERPERAL STREPTOCOCCAL INFECTIONS

The streptococcus, unlike the gonococcus, does not usually lead to destruction of the lining membranes of the uterus and fallopian tubes. This organism tends, rather, to pass through the mucosa to reach the lymphatics. Abscesses may, however, result from an acute infection in the uterus, tubes and ovaries; but, in my experience, abscesses in the uterus and tubes require intervention before they can become chronic, whereas abscesses in the ovaries may be encountered in a quiescent state. The chronic lesions, then, may consist of chronic metritis (fibrosis uteri), as a separate pathologic entity, or of salpingitis with the production of a hydrosalpinx or a sealed abdominal ostium, either

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alone or associated with an ovarian abscess. Such infections are often limited to the appendages of one side.

When the lesion is unilateral it is necessary to remove only the tube and ovary of the affected side, if no conservative operation, such as salpingostomy is indicated.

If both tubes are occluded but not distended, and at least one ovary appears to be little affected, then salpingostomy on one or on both tubes should be practiced. It is useless to perform salpingostomy on a hydrosalpinx, for the uterine end of the tube is blocked.

If both ovaries contain abscesses they must be removed, and a portion of one must be grafted. If this is necessary, conservative operations on the tubes are, of course, unnecessary.

When, usually many years subsequent to infection, a uterus in which extensive fibrotic changes have taken place is encountered, vaginal hysterectomy should be performed to save the patient from the evil consequences of excessive menstrual losses. Generally, in these circumstances, the appendages are healthy.

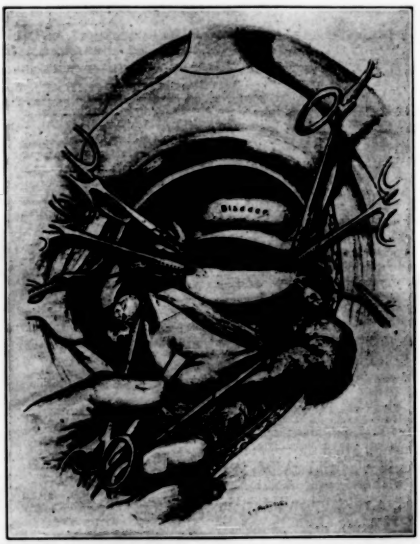


Fig. 3.—Author's operation of achrohysterosalpingoophorectomy, first stage. In the illustration the right ovary is shown to have been retained. This is rarely possible.

### APPENDICULAR INFECTIONS

Appendicitis in women is always an operation for the gynecologist. Only too frequently the right ovary and tube, if not the left appendages also, are involved. Since the infection, which consists of an invasion by organisms from the large bowel, has spread directly from outside, the lumen of the fallopian tube is but rarely implicated. The tube and ovary, on one or on either side, become bound down, and the abdominal ostium becomes occluded by peritoneal adhesions. The ovary usually becomes cystic. When the infection is severe, suppuration in the ovary and tube may occur; but I do not think this is common. The uterus, of course, practically always escapes.

In a large majority of cases, it is, then, only necessary for the surgeon, after the appendix has been removed, carefully to cut through adhesions which are generally fine, to excise cysts from the ovaries and, when the abdominal ostium is sealed, to perform salpingostomy. Afterward the tube and ovary should be supported by fixation of the ovarian ligament to the round ligament (Figs. 1 and 2).

The functional results of salpingostomy cannot yet be stated with certainty, at least so far as my own cases are concerned; but the fact that conception does occasionally follow this procedure encourages me to hope that with improvements in our technic it will more often be successful. Moreover, it is consoling to the patient to know that there is a possibility, however remote, of subsequent pregnancy.

### TUBERCULOUS INFECTION

There is still need for further observations on the origin and dissemination of infections by the tubercle bacillus in the female genital organs. Here it may be found apparently as the only somatic tuberculous focus in young girls. In adults, quite commonly it follows tuberculous infection of the peritoneum. Is the lesion seen in young girls secondary, therefore, to infantile tuberculous peritonitis, from which the patient has recovered, or is it the result of some obscure blood conveyance, and, if so, whence has it come?

In the few cases in which I have observed this condition in girls, there has usually been complete arrest of the genital functions, with implication of all the internal reproductive organs. In such circumstances, if surgical procedures are indicated, complete removal of the genital organs is necessary. If, on examination, an ovary appears unaffected, it may be left. Happily, these lesions in young girls are rare.

On the other hand, tuberculous infection of the genital organs occurring during the young adult reproductive period is unfortunately common. We have usually to deal with two distinct phases—I say "phases" rather than "types" because I believe the origin of tuberculous infection in adults is almost always the result of previous peritoneal infection. The first phase is that in which there is generalized tuberculous peritonitis often with considerable effusion of free fluid into the abdominal cavity. In these circumstances, thickened peritoneum, studded with small tubercules in the pelvis, as elsewhere, covers uterus and tubes; the tubes are swollen, but the ostia are open and the lumina may contain no pus; the ovaries are frequently unaffected, and only the peritoneal surface of the uterus is involved.

What treatment are we to adopt? Is it sufficient to evacuate the fluid from the peritoneal cavity and to trust to the recovery of the pelvic peritoneum along with that lining the rest of the abdominal cavity? I do not think it is, although I have in the past sometimes contented myself with evacuation of the free fluid in the abdomen, and have left the tubes in the hope that they might escape luminal infection. But my hopes in this respect have not been justified. The case herewith reported indicates what I believe not infrequently occurs if the tubes are left.

REPORT OF CASE

A woman, aged 34, when first seen, complained of abdominal pain which had commenced after a confinement, six months previously. Her abdomen was full of free fluid, obviously the result of tuberculous peritonitis. I evacuated the fluid and removed the appendix, but did not interfere with the genital organs, which appeared unaffected except on the peritoneal surfaces. Thirteen months subsequently she

Fig. 4.—Specimen removed at the operation of acrohysterosalpingoophorectomy; a portion of the right ovary has been removed for grafting.

consulted me again, when I found that the appendages were grossly infected. Laparotomy was performed once more, and it was observed that the general peritoneal cavity and the pelvic peritoneum had completely recovered, but that the tubes and uterus were seriously diseased. The ovaries appeared to be normal. I performed panhysterectomy with removal of both tubes and the left ovary. The tubes had been converted into pyosalpinges, and the mucosa of the uterus, including that of the cervix, was diffusely infected.

Some months later, the patient was found to be suffering with tuberculous ulceration of the vault of the vagina. This was scraped and cauterized, and apparently cured. Later, I heard that the patient had been treated by a physician for tuberculous pleurisy.

It appears to matter little, therefore, whether the tubes are obviously involved in the presence of a generalized peritoneal infection or not, for by the time the patient seeks advice and the fluid is evacuated the lumina are infected in almost every case. The practice on which Mayo and others have insisted should be followed: The tubes must be removed when the peritoneal fluid is evacuated, and I think it wise to remove with them the uterine cornua.

The ovaries are unaffected, as a rule, by an infection reaching them from without, that is, from the peritoneum. Hence, it is usually safe to leave one of them if it should show no obvious lesion, or to graft a portion of it.

In those cases of tuberculous infection of the pelvic organs in which the peritoneal infection has subsided, it is, I think, usual to find bilateral pyosalpinges which may be associated with ovarian abscesses. The uterus may be affected; but in many old standing cases, this is found to be so only in regard to the cornua, if this organ is infected at all. Sometimes there is menorrhagia, but more often there is scanty menstruation or amenorrhea. In most instances, especially when the ovaries are involved, the tubes, ovaries and the uterus should be removed. Sometimes it may be possible to graft a portion of an ovary.

GONORRHEAL INFECTIONS

I need say nothing to an assembly such as this of the frequency of ascending gonorrheal infection of the female genital tract.

By the time the patient presents herself for treatment, surgical interference alone usually offers the only satisfactory and sure prospect of relief; but surgical treatment to be successful must, as always, take account of the symptoms and lesions present.

If the infection has been slight and the patient's resistance has been high, the tubes alone may show pathologic changes: hydrosalpinges have formed. The uterus has entirely recovered and the ovaries have never been affected. All that is necessary, therefore, is the division of adhesions and the removal of the tubes. Should an ovary be cystic it may be removed or the cyst excised.

With regard to the more serious lesions produced by the gonococcus, there are four points in the pathology and symptomatology that require consideration. First, the gonococcus tends to remain long localized in the mucous membranes and to destroy that in the tubes. Second, sterility is practically inevitable when the tubes are involved. Third, the ovaries are frequently infected. Fourth, a large majority of all patients so affected suffer with menorrhagia. In many of these cases, there are, then, cervical infection, bilateral pyosalpinges, infection in a lesser or greater degree of the ovaries and of the fundus uteri. The treatment is, therefore, based on the conditions present.

The cervix, if it is lacerated or is still in a state of live infection, should first be amputated; but often it is entirely quiescent, noninfective and in the virgin state.

In sexually active women, who form by far the largest class of patients, when the fundus uteri and appendages are attacked, my practice is to perform the operation I described some years ago. By this operation I excise in one piece the tubes, ovaries and a transverse wedge-shaped portion of the fundus uteri (Figs. 3, 4 and 5). Afterward I unite the uterine flaps, attach the stumps of the infundibulopelvic and round ligaments to the posterior aspect of the reconstructed uterus on either side, and then cover the uterus and all raw surfaces with a flap of peritoneum dissected from the uterovesical pouch and anterior surfaces of the

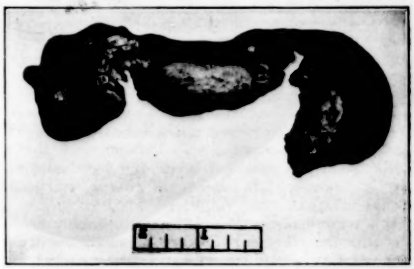

Fig. 5.—Specimen removed at the operation of acrohysterosalpingoophorectomy; a portion of the right ovary has been removed for grafting.

broad ligaments (Fig. 6). Subsequently I make an ovarian graft. A somewhat similar operation on the uterus and tubes—without ovarian grafting—has been independently devised and practiced by Beuttner of Geneva. In the first forty cases published by this surgeon and his assistants there were five deaths—a very high mortality. I have, at the time of writing, per-

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formed my operation 125 times with the loss of only two patients, one of whom died from an intercurrent affection.

Functional results have been obtained in over 80 per cent. of all my cases of ovarian grafting. Of the cases in which menstruation has been possible, owing to a portion of the uterus having been retained, menstruation has occurred in 70 per cent.

I regret that time will not permit my discussing ovarian grafting in more detail and at greater length. I wish, however, especially to urge that this valuable procedure be practiced in cases in which it is not safe to leave an ovary in the pelvis lest it become adherent and cystic. There are still some of us who are satisfied by the experimental and clinical evidence at our disposal that the ovary is of real importance to the sexually active women. In women nearing the menopause, I sometimes perform supravaginal or complete hysterectomy, but almost invariably I make an ovarian graft, which even at this time of life is of immense value in tiding the patient quietly over what may otherwise be a stormy climacteric.

## CONCLUSION

In the foregoing remarks I have attempted very briefly to outline my own practice in the treatment of lesions associated with chronic infections, and I have tried to explain how my methods are based on a conception of the pathologic actualities and possibilities, and on the importance of the conservation of function when this is practicable.

38 Rodney Street.

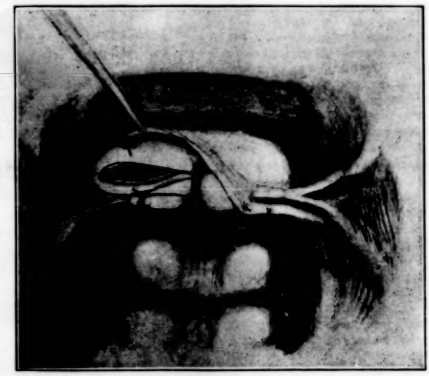

Fig. 6.—Final stages of the author's operation of acrohysterosalpingoophorectomy.

## ABSTRACT OF DISCUSSION

DR. C. JEFF MILLER, New Orleans: It should not be necessary to stress the importance of preserving the function of the generative organs, but it is unfortunately true that many surgeons operate in the acute stage of infections, when nothing short of a radical operation could be done. Pelvic infections almost invariably become sterile, exudates disappear, and a fair percentage of cases will never require operation; and, if an operation is eventually necessary, it is surprising how much of the structures can be saved, and how often some plastic measure is possible. Conservative work, however, requires a great deal of experience and a knowledge of pathology, in order to obtain the best results; types of infection must be differentiated whenever possible, and if a conservative operation is contemplated, gonorrheal infection should be eliminated, or results are by no means gratifying. In my experience, conservative work has been more applicable to puerperal lesions than to other types, since we do not find the lumen of the tube so often damaged. The removal of adhesions about the tubes and fimbriae following puerperal infections is most satisfactory, and in such cases the plastic operation devised by Dr. Bell is especially applicable. In tuberculous lesions, conservative measures are to be discountenanced. In 90 per cent. of cases of tuberculosis of the pelvic organs, the tubes are involved, and in 25 or, possibly, 30 per cent., the endometrium is involved. In these lesions, the tubes should always be removed, and in the majority of instances a hysterectomy is indicated. As to ovarian grafting, I approve of Dr. Bell's stand on this subject. During the last eight years I have resorted to ovarian grafting in about thirty cases, and the results have been most gratifying. It is usually possible to save at least a portion of an ovary, and even a small remnant will frequently preserve menstruation for months or years, and permit of a gradual menopause. I have often deliberately transplanted an ovary, when the condition of the pelvis was such that I felt that adhesions would follow the operation, having found by previous experience that not a single patient subjected to ovarian grafting had suffered afterward during menstruation. With one exception, menstruation was reestablished within four months in every case. Some women menstruated from one to two years; others have menstruated as long as eight years. I believe that many have been disappointed in ovarian grafting because of the technic adopted. The method presented by Dr. Bell is an ideal one, and if followed in detail will be found satisfactory. Excising the fundus of the uterus, together with the tubes is applicable in some cases, but by no means good as a routine operation. I have performed the operation in several instances, but I felt that the convalescence and condition of the pelvis afterward was not so good as when the tubes were removed thoroughly at the cornua, and the peritoneum carefully closed over the stumps. In two or three instances metrorrhagia developed some time after the operation, and one case required the removal of the balance of the uterus. I think the operation especially applicable in young women, when the uterine structures appear involved, and when a special effort is to be made to preserve menstruation.

DR. ARTHUR CURTIS, Chicago: In a recent study of the bacteriology and the pathology of the fallopian tubes removed from about 300 women, I have been more than ever impressed with the importance of making a differentiation of the etiologic cause of these infections, because the treatment should differ according to the organism which is causing the trouble. In gonococcal infections, in a study of the entire tube where it has been thoroughly ground so that we are sure we missed no bacteria which might possibly be buried in the tissues, it has been found that we are never able to obtain the gonococcus more than ten days or two weeks after fever and leukocytosis have disappeared entirely. This means that chronic infection in the fallopian tube in case of gonorrheal disease almost never exists. Those instances in which we have heretofore made a diagnosis of chronic salpingitis are really reinfections from the original external source, or recurrence of infection due to ascent of the gonococcus from the infected lower genital tract, especially from the cervix. Again, I have noted that if one isolates the patient from the source of her infection at the beginning of salpingitis, almost never does a lesion of very severe degree follow; the tubes are not markedly altered, and the patient has limited symptoms. In streptococcic infection the story is different. Instead of the bacteria quickly disappearing, one is often able to isolate the streptococcus in considerable numbers, not only months but many years after the origin of the infection. Another diagnostic feature of importance is that in streptococcus disease we are apt to find extremely firm adhesions; the same is true of tuberculous salpingitis, easily amenable to separation by blunt dissection, with either the scissors or the fingers. Indications for operation

in streptococcic and in tuberculous infections are quite similar. In the severe infections it is advisable to be rather radical because viable bacteria are often still present. If there is a questionable ovary, it is desirable to remove it, whereas in gonococcic infections with slight ovarian involvement we may leave the ovary because we know the organisms have already disappeared.

DR. SIDNEY A. CHALFANT, Pittsburgh: After listening to Dr. Bell, I realize that my technic has been faulty. I have been in the habit of placing the graft under the skin, but on top of the fascia, realizing that the blood supply was not of the best, and fearing to place it deeper on account of infection. I had one graft that became infected and sloughed out after a few days. Accordingly, my results have not been so good as Dr. Bell's. I have had the same experience, the amenorrhea with all the symptoms of the menopause varying from four to six months; then a recurrence of menstruation persisting for a number of years. I have felt, too, that the graft was of value in cases in which the uterus had been removed and menstruation was impossible. In comparing the number of those cases with the patients who had had a previous complete hysterectomy without graft, I have found that there was a definite lessening of the severity of the menopausal symptoms. The persistence of streptococcic infection has been proved by two tragedies. One patient sustained a fracture of the femur on her way to the hospital for her operation, having been struck by an automobile. For three or four months she had a normal temperature, except during an attack of acute tonsillitis about three weeks before operation. The test, as suggested by Dr. Bell, was negative. Examination made on two occasions preceding her operation was without any resultant rise in temperature. She developed an acute streptococcus peritonitis and died within thirty-six hours. There was a little leakage of the tube at the time of operation, which probably was the source of infection.

DR. GORDON COPELAND, Toronto, Canada: Would you not differentiate genital tuberculousis into two classes? Tuberculosis is a systemic disease, and the genital infection in the majority of cases is only one part of the whole complex. Those of us who have given some attention to heliotherapy, especially following the work of Rollier, have been impressed by its importance. In many cases a thorough treatment by this method will totally eradicate the genital tuberculosis together with manifestations of the disease in other parts of the body. There are certain cases in which the indications would be to use the more conservative methods of heliotherapy first. In the majority of cases, if a cure is not effected, it will at least improve the patient's general condition so that she will stand operative procedures better.

DR. HENRY SCHMITZ, Chicago: In the Cook County Hospital, tubal infections amount to 75 per cent. of all cases that come under observation. While in private work 50 per cent. of tubal infections are operable, in the Cook County Hospital the indications for operation are more numerous. These patients are entirely dependent on the county when physically disabled, and their mode of living is such that if we treat them conservatively they go back to their old ways and return to the hospital with the same infection. The result has been that I have been very radical in the treatment of these conditions. As soon as the patient's temperature has remained normal for one week, I resort to the bilateral operation. I remove the tubes and ovaries radically, no matter what the age of the patient. I save as much ovarian tissue as I can. It remains in the posterior culdesac. The ovarian tissue is cut into cubes. The rectus muscle on one side is split and the cubes are placed within the substance of the muscle. The ovarian tissue very easily slips out unless this is closed. It takes usually four or five months before these patients will begin to menstruate. They rarely complain of any symptoms which may be attributed to menstruation.

DR. W. BLAIR BELL, Liverpool, England: There has been general agreement in the principles of dealing with these lesions. Just one or two points of interest have been raised. When Dr. Miller operates on the tuberculous pelvis he does a supravaginal hysterectomy. My procedure is simply to remove the tubes and the cornua of the uterus. Removal of the body of the uterus alone is not very good practice. It is better to remove the whole organ. If the fundus is infected, the cervix is also in the majority of cases. I was very much interested to hear Dr. Miller's experience of the menopause supervening after ovarian graft. My experience has been the same. When it does not remain that long, the menopause is a very easy one. I leave the fundus wherever I can, or a portion of it, in order to preserve menstruation. Dr. Curtis' work on etiology will be widely recognized all over the world. I agree with all the points he stated, especially in regard to the streptococcus. The test I mentioned is most accurate for streptococcic infections. Dr. Chalfant spoke of infection. I have put the graft in the internal oblique muscle. I think every one of these patients has menstruated since and has remained well. I agree with Dr. Copeland that the tuberculous infections must be divided into two groups. I was dealing only with local pelvic infections. Chronic infections of the pelvis with free ascitic fluid are, in my experience, almost invariably cured as far as the disease is concerned in that region. Not in one of my cases have I had a subsequent infection. Dr. Schmitz mentioned the question of the conservation of tissue in the pelvis. In very many cases an ovary becomes adherent again and it is no better than a satisfactory ovarian graft which will save the patient a further operation.

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# TUMORS INVOLVING THE GASSERIAN GANGLION *

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The relative infrequency of involvement of the gasserian ganglion by tumor is my justification for presenting this subject for your consideration.

In 1900, Dercum, Keen and Spiller [1] reported the first case in the English literature of tumor involving the gasserian ganglion and the second to be treated by surgical measures. In 1918, Frazier [2] reported forty cases from the literature and three of his own. Thirteen of these, including his three cases, were treated surgically.

The literature on the subject has been so thoroughly reviewed by Spiller,[3] Hellsten,[4] Frazier [2] and others,[5] that to repeat it seems unnecessary. I shall, therefore, confine my discussion largely to the data concerning the four cases here reported.

## REPORT OF CASES

CASE 1 (A 125267).—J. F., a man, aged 26, examined, Feb. 25, 1915, had had tuberculosis of the right knee at the age of 12, the recovery resulting in ankylosis; an abscess of the rectum at 16; typhoid at 17, and an acute otitis media of the right ear at 22. Eighteen months before he began to have pain in the right cheek and in front of the right ear with

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1. Dercum, F. X.; Keen, W. W., and Spiller, W. G.: Endothelioma of the Gasserian Ganglion; Two Successive Resections of the Ganglion; First, by the Extradural (Hartley-Krause) Operation, and Secondly, by an Intradural Operation, J. A. M. A. **34**: 1026-1033 (April 28) 1900.

2. Frazier, C. H.: Tumor of the Gasserian Ganglion, J. Nerv. & Ment. Dis. **48**: 440-441, 1917; An Operable Tumor Involving the Gasserian Ganglion, Am. J. M. Sc. **156**: 483-490 (Oct.) 1918.

3. Spiller, W. G.: Tumor of the Gasserian Ganglion, Am. J. M. Sc. **136**: 712-725, 1908; Remarks on the Central Representation of Sensation, J. Nerv. & Ment. Dis. **42**: 399-418, 1915.

4. Hellsten, M.: Ein Fall von Ganglion Gasseri Tumor, Deutsch. Ztschr. f. Nervenh. **52**: 290-305, 1914.

5. Cadwalader, W. B.: Significance of Facial Pain in Determining the location of Intracranial Tumor, Arch. Neurol. & Psychiat. **4**: 182-184 (Aug.) 1920. Hofmeister and Meyer: Operierter Tumor des Ganglion Gasseri, Deutsch. Ztschr. f. Nervenh. **20**: 206-222, 1906. Sachs, E.: Tumors of the Gasserian Ganglion, with the Report of an Operated Case, Ann. Surg. **66**: 152-159 (Aug.) 1917.

radiation toward the chin associated with burning within the cheek and on the right side of the tongue. The pain was almost constant with occasional severe exacerbations; it was intensified by lying on the left side, by pressure in the right auditory meatus or by blowing the nose. For five months he had not been able to open his mouth as wide as usual, and

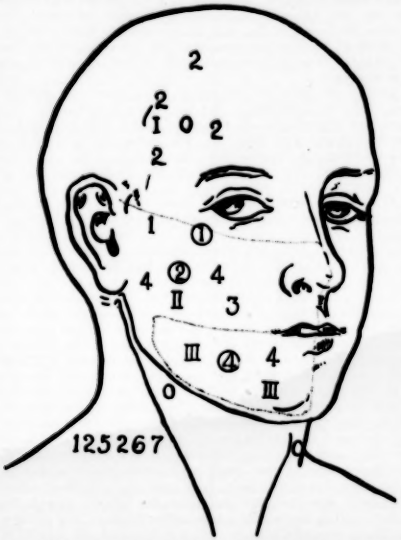


Fig. 1 (Case 1).—Anesthesia chart: tactile disturbance, 0 to 4 in circle; pain disturbance, 0 to 4; temperature disturbance, 0 to IV.

the jaw deviated to the right. During the last month he noticed that the right pupil had become smaller than the left; that the right cheek, chin and the right side of the tongue were numb, that fluids escaped unnoticed from the right side of the mouth, that taste was impaired on the right side of the tongue, and that his voice had developed a nasal quality. Following a cold about six weeks before, the glands below the left jaw had enlarged, and after ten days, incision and drainage were required.

The patient was 20 pounds underweight, but his color was good. The general examination was negative, except for enlarged glands under both jaws, the left the larger. Glands taken from both sides were found to be tuberculous on microscopic examination. The Wassermann test of the blood was negative. The right pupil was smaller, the vision in the right 20/30, in the left 20/20; the light and convergence reactions were normal, the fundi were negative, the right corneal reflex was practically lost, the ocular movements were normal, but there was a slight ptosis of the right lid. The sensation disturbance of the right fifth was of an unusual type. Touch was lost over the chin, and moderately impaired over the cheek, while over the forehead it was normal and equal with the left. Recognition of head and point was lost over the chin and the cheek, and much impaired over the forehead. Temperature was most impaired over the chin but was not abolished; it was impaired but less so than pain over the cheek and forehead. The quite definite dissociation of sensation remained constant throughout the period of observation. Heat and cold were not specified separately. The masseter and temporal of the right side were weak, and the jaw deviated to the right on opening. The soft palate was weak on the right side. The remainder of the central nervous system was negative. Hearing was normal in the left ear. The right drum was greatly retracted and contained a small perforation, causing a moderate impairment of hearing.

The patient was examined several times during the period from February to July, this interval being employed for a therapeutic test with mercury rubs and potassium iodid. A septum operation was performed for a high deflection with a septal spur. This gave a good functional result, but the pain was not modified. The right antrum was irrigated because of defective transillumination, with negative results. In May, double vision was first noticed; it was due to weakness of the right external rectus. This increased gradually and remained constant. In June, ptosis seemed more pronounced, but transient. By July, the motor fifth was completely paralyzed, as was also the right side of the soft palate. At this time a gland was removed from the left side of the neck; on microscopic examination it proved to be tuberculous.

Notwithstanding the presence of glandular tuberculosis, we believed we were warranted in exploring the gasserian ganglion region. A spherical tumor about 1 cm. in diameter coming directly from the tissue around the ganglion was removed (Beckman). The microscopic diagnosis of the tumor was endothelioma (Fig. 2). Two weeks later a gland removed from the right side of the neck was also found to be tuberculous.

For a month following the operation there was no pain, after which it gradually returned in the same area. In September and October, alcohol injections were given in an attempt to relieve the pain, but with no definite result. Further observation was not made, but information was received that the patient's symptoms gradually intensified until his death in July, 1916.

CASE 2 (A 232362).—Mrs. D., aged 45, examined, May 25, 1918, had had good health except for attacks of diphtheria four years and two years before. About six months before the onset of her present symptoms she received a severe blow on the forehead, which did not cause unconsciousness, nor was there any evidence of fracture. She had had tinnitus, especially in the left ear, for two or three years. One and one-half years before coming to the clinic she began to have severe steady pain in the left cheek, which had been practically constant since onset. All the teeth had been removed, and the left antrum had been opened five months before, without relieving the pain. The last two months, a hoarseness and some difficulty in swallowing had developed. For a considerable period she had had epileptiform attacks at intervals of two weeks. Several alcohol injections had been made without relief, although the numbness in the face was considerably

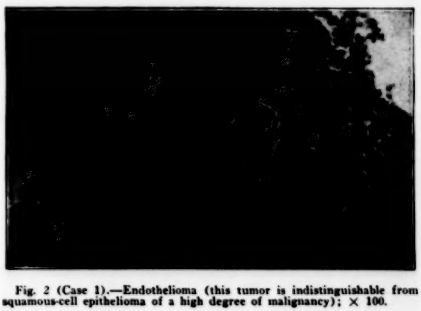

Fig. 2 (Case 1).—Endothelioma (this tumor is indistinguishable from squamous-cell epithelioma of a high degree of malignancy); × 100.

increased by them. The patient was quite weak, emaciated, and suffering from severe pain.

There was complete paralysis of the left external rectus, and also slight ptosis. The left pupil was slightly smaller than the right; the pupillary reaction to light was markedly reduced; the reaction to convergence was normal. The fundi were normal. There was slight nystagmus on looking to the right. The left masseter and temporal muscles were greatly weakened, and the jaw deviated to the left. Tactile sensibility

was lost over the left chin and the angle of the mouth, and it was pronouncedly impaired over the left cheek, the degree gradually lessening toward the forehead, where it was normal. Pain and temperature sensibility were lost over both the chin and cheek, and were moderately impaired over the forehead. The left auditory meatus was anesthetic to pin-prick. The

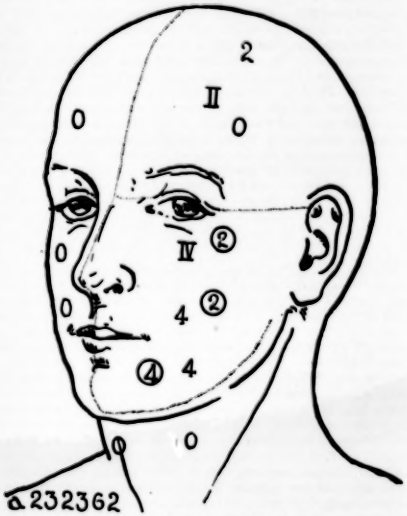


Fig. 3 (Case 2).—Anesthesia chart.

left side of the face seemed a trifle flat, but the power seemed normal. The watch-tick was not heard in either ear, and tests with the forks indicated a marked nerve deafness in both ears, especially the left. The soft palate was pulled toward the right, and fluids were often deflected through the nose on swallowing. The left vocal cords were paralyzed. The left sternomastoid was weak. The left half of the tongue was markedly atrophic, with fibrillary twitchings near the tip. The reflexes of the arms were normal; the knee and Achilles on the left were somewhat more active than on the right, and there was a Babinski response from each foot. The abdominal reflexes were absent. The sensation, with the exception of that of the face, the coordination, the station and the sphincter control were normal.

June 15, an attempt was made to relieve the severe pain by section of the posterior root of the fifth nerve. Through the usual approach the ganglion with a portion of the tumor was removed *en masse* and the posterior root cut. A partial paralysis of the left seventh nerve appeared after the operation. Only temporary relief from the pain was obtained. The pathologist diagnosed endothelioma (Fig. 4). In December, 1918, a report from her physician stated that symptoms continued with gradually progressive emaciation until death.

Case 3 (A 231496).—Mrs. Z., aged 47, examined, May 15, 1918, had always been in good health, was well nourished, and had a good color. Eleven months before she began to have severe pain on the left side of her head; this had been practically constant since. Six months before a convergent strabismus appeared in the left eye. All the teeth on the left side had been removed, and a nasal operation had been performed five months before, but without relief.

The general examination was negative. The blood and spinal fluid were negative. Vision in the right eye was 6/6, in the left 6/15. The pupils were equal, and pupillary reaction was normal; the fundi and fields were negative. The left external rectus was paralyzed. The upward movement of the left eye was greatly impaired. The movements downward and inward were impaired. The movement of the right eye was normal. The left masseter and temporal muscles were weak and atrophied and the jaw could be moved only to the left. There was no anesthesia of the face; touch with cotton was somewhat painful. Hearing in the right ear was normal, but the left ear showed a profound nerve deafness. The tongue protruded to the left, its movements were slow, and pronounced atrophy was present on the left side with fibrillary twitchings. The left sternomastoid showed definite atrophy and weakness.

June 5, the gasserian ganglion was exposed for palliative and exploratory purposes. The site of the ganglion was occupied by a large bluish red tumor, of which only a portion 2.5 cm. in diameter was removed. The tumor was believed to be endothelioma on microscopic examination (Fig. 5). The posterior root was cut. The pain was entirely relieved for one year.

After the patient's dismissal from the clinic, an ulcer of the cornea developed which eventually healed, leaving a dense corneal scar with blindness. In December she had a mild attack of influenza which appeared to have no serious effect. Coincidentally with this she lost her voice; a pronounced hoarseness has persisted since.

December, 1919, the patient returned to the clinic because, during the previous three months, pain had recurred and complete ptosis of the left lid had developed. The pain was now felt not only in the left face but also in the left neck, shoulder and arm. Besides the ptosis, the left eye was practically without movement, and was blind; the record, however, does not state whether or not light perception was lost. Vision in the right eye was 6/5; the fundus and ocular movements were normal. The anesthesia was total and of typical distribution following section of the posterior root. The left vocal cord was paralyzed, which explained the persistent cough and hoarseness. A few small, hard lymph glands were found behind the left lower jaw; they were not removed. These additional signs indicate that extension of the process had occurred along the middle and posterior fossae. Only palliative measures were advised.

Case 4 (A 213637).—H. M. D., a man, aged 28, examined, Nov. 13, 1917, had had convulsions during the first two years of his life. When he was 4 a congenital convergent strabismus of the left eye was noticed; he was operated on for this when he was 9. At the age of 15, the left eye became divergent; this was operated on when he was 17. Both eyes have always

Fig. 4 (Case 2).—Endothelioma (this tumor is indistinguishable from squamous-cell epithelioma of a high degree of malignancy); × 100.

been prominent, the left more so, and vision in this eye was never sufficient to read by.

Recently a report was received from the patient's physician, Dr. Otto Lundman of Toledo, and I am including it here in order to continue the narrative of the disease in proper sequence. "In December, 1913, the patient, then in good health, consulted me for refraction. The vision of the right eye with correction was 6/5. With the left eye he counted

fingers at 2 feet. In June, 1914, he returned complaining of dizzy spells, when an optic neuritis was found in the right eye and optic atrophy in the left. The visual field was normal in the right eye, but a marked concentric contraction for white and colors was present in the left. A month later an incipient choked disk was present in the right eye."

The history given in the Mayo Clinic in November, 1917, was that for two years his vision had been failing gradually. Sufficient vision remained to count fingers with the right eye and only to perceive light with the left. Eleven months before he had noticed a burning, prickling sensation on the right cheek, which soon spread to the mucous membrane of the cheek, the right edge of the tongue, the face and the fore part of the scalp. The same area was sensitive to the touch, and here he sometimes felt sharp, shooting pains. Fluids ran from his mouth, nostril and right eye without his knowledge. His mouth felt as though it were open; his tongue felt rigid. His gait was slightly uncertain, the dexterity of his hands at times was impaired, and occasionally he had spells of dizziness.

The general examination, including blood and spinal fluid tests, was negative. The sella showed some enlargement. The pupils were equal, moderately dilated and reacted sluggishly to light, both direct and crossed. The fundi showed a definite secondary optic atrophy. There was slight divergence of the left eye, and its movements were somewhat impaired; this was attributed to the congenital defect of the ocular muscles.

The sensibility to touch, pain and temperature was quite uniformly lost over the distribution of the right fifth nerve. The right corneal reflex was absent. The right masseter and temporal muscles were weak and atrophied, and the jaw could be deviated only to the right. The patient recognized ammonia in the left nostril but not in the right. Camphor was detected equally well in the two. The hearing was normal to the watch, but the response to the forks was slightly but equally reduced. The neurologic examination was otherwise negative.

Nov. 24, 1917, a well encapsulated reddish blue tumor 2 cm. in diameter, situated above but involving the right gasserian ganglion, was removed. The tumor was diagnosed glioma on microscopic examination (Fig. 7). Our observation continued for one month following the operation. Slight subjective improvement in sensation occurred; that is, he could tell when his lips were closed. The fundus examination revealed a swelling of 2 diopters in each eye, but this subsided. Three and one-half years later his physician reported that his general condition is very good. His vision has remained unchanged; the eyes are very prominent. Occasionally sharp pains are felt in the right side of the head, but this is much less frequent than was reported two years before. There is still anesthesia of the right fifth nerve. Thus far, no evidence is at hand to indicate a recurrence; in fact, there has been slow but gradual improvement.

## COMMENT

Pain is usually the initial symptom and the one for which relief is sought. It varies considerably in intensity and constancy. Sudden paroxysms of pain were infrequent in our cases, and in no instance was it influenced by eating, by speaking, or by external irritation. In three cases the pain was referred to the cheek, lips, chin or tongue, and in one case it was diffuse over the left face.

Tumors involving the gasserian ganglion exhibited evidence of varied extension into the middle and posterior fossae. Implication of the nerves immediately adjacent to the ganglion is the rule, but those of the posterior fossa are much less frequently disturbed. Hellstein's patient had atrophy of one half of the tongue. In Case 2, besides atrophy of the left side of the tongue, the patient's left vocal cord was paralyzed and the left sternomastoid was weak and wasted. In Case 3, the patient's tongue and sternomastoid were affected when she was first examined; this was followed in six months by involvement of the left vocal cord. The epileptiform seizures of the patient in Case 2 may have been due to extension of the tumor to the cortex of the temporosphenoidal lobe. However, there is no further evidence to support this.

No anesthesia was demonstrable in the patient in Case 3. The pain was very intense. Sensibility to touch with cotton was acute and somewhat painful. Discrimination of head and point was prompt and accurate. Temperature sensibility was also normal. Spiller reports similar findings in one of his cases, and at necropsy no distinct ganglion tissue was found. This situation is unusual, especially in view of the observation of the surgeon that the gasserian ganglion in Case 3 was completely destroyed by the tumor and that a portion 2.5 cm. in diameter was removed. The ailment had then been of eleven months' duration. Following the cutting of the sensory root a complete

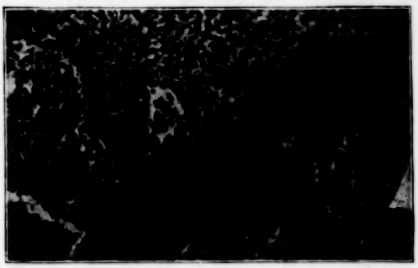

Fig. 5 (Case 3).—Epithelioma (this tumor is indistinguishable from squamous-cell epithelioma of a high degree of malignancy); × 100.

permanent anesthesia resulted (at least it was constant for one year) so that the natural progression of the signs was interrupted.

A second peculiarity was found in Case 1 and in Case 2, in that both patients exhibited decided impairment of pain and temperature sensibility over the forehead, while the tactile sensibility was normal in this area in both.

The work of Spiller and others indicates that the spinal root of the fifth nerve serves the sensation only of pain and temperature, and that the touch fibers pass work to the sensory nucleus directly after entering the pons. This arrangement of the fibers offers opportunity to damage either group of fibers separately and to abolish either touch or pain and temperature in the corresponding distribution of the fifth nerve.

In Case 1 and in Case 2 the touch, pain and temperature were abolished in the third division; over the second division the touch was moderately impaired, while over the first division it was normal. Over the first division, pain and temperature were moderately impaired. This type of disturbance seems to have been produced by unequal involvement of the ganglion or the peripheral divisions of the nerve.

We had no opportunity other than the limited one offered at operation to study the location and extent of the damage done by these tumors. In Case 2 the cranial nerves were involved from the third to the twelfth nerve, and the bilateral Babinski reaction suggests involvement of the two pyramidal tracts in the same

region. There was no impairment of sensation in the trunk or extremities, nor any disturbance of gait or station not accounted for by general weakness and emaciation.

The gasserian ganglion may be involved with tumors arising primarily from the nasopharynx. These tumors

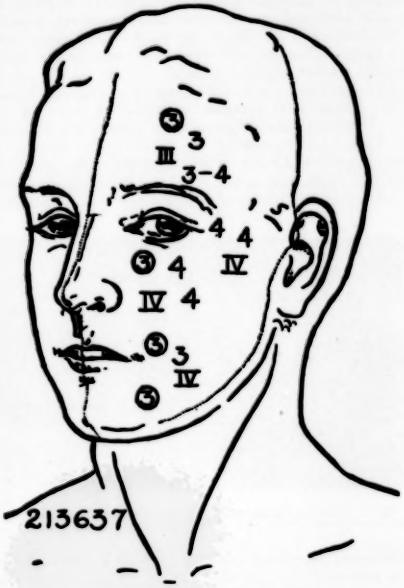


Fig. 6 (Case 4).—Anesthesia chart.

are usually of the squamous-cell type (epitheliomas). In this location the primary tumor may not cause subjective symptoms until the skull is penetrated, when, because of the involvement of one or more of the cranial nerves, the clinical manifestations are those of an intracranial disease. Such tumors may properly come within the scope of this discussion; we have classified them as nasopharyngeal tumors with extension to the central nervous system, although the symptomatology and clinical signs are indistinguishable from those caused by tumors arising within the cranial cavity and involving the ganglion.

We have observed sixty-five tumors of the nasopharynx, nine of which have been attended with intracranial extensions from the optic chiasma to the medulla, and of the nine, four have exhibited the gasserian ganglion syndrome.

In approximately the same period, six cases of intracranial tumors involving the ganglion have been observed. One case was reported by Plummer and New[6] in 1913, one patient was not operated on or the case otherwise verified, and four are the cases considered in this paper.

6. Plummer, W. A., and New, G. B.: Tumor of the Middle Cranial Fossa Involving the Gasserian Ganglion, J. A. M. A. 69: 1082-1083 (April 4) 1914.

From a therapeutic standpoint, the two groups are decidedly different. In spite of the poor prognosis, surgical measures are advisable in the intracranial tumors, whereas the tumors of the nasopharyngeal group admit only of palliative treatment with radium; this gives a fair prospect of relief at least from pain.

Involvement of the cervical lymph glands with metastasis from a primary tumor involving the gasserian ganglion has been reported with relative frequency. Metastasis in these glands has no definite localizing value, but is of decisive importance in establishing the presence of malignancy. As nasopharyngeal tumors are even more prone to metastasize in the cervical glands, this probability should be given due consideration in diagnosis and treatment. Bilateral tuberculous glands were a complication in one case in our series, and in two cases small cervical glands, which were noted very late in the clinical course, were left undisturbed because their investigation was only of pathologic interest.

A patient with a tumor involving the left gasserian ganglion is not included in this series, but the case deserves mention because of an associated chronic purulent mastoiditis on the same side. It was thought that extension of the chronic inflammatory process to the dura might involve the ganglion also. A mastoid operation with exposure of the dura, in fact, revealed quite an extensive pachymeningitis; but subsequent complete healing of the operative field failed to modify the symptoms and course of the primary affection. A few weeks later a swelling gradually appeared in the left temple owing to infiltration of the skull by the tumor which precluded any successful intracranial operative procedure. Death occurred one year and four months after onset. No postmortem examination was made.

Pathologic specimens obtained in Case 1, Case 2, and Case 3 were strikingly similar, as were also the clinical courses. The average duration of life of the three patients after the onset of the symptoms was about two years. Broders states that the present method is to refer to these tumors as endotheliomas, but they are indistinguishable from epitheliomas.

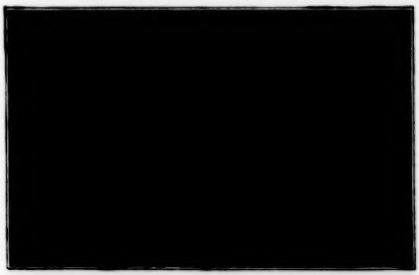

Fig. 7 (Case 4).—Glioma; × 100.

The clinical course in Case 4 is so at variance with the usual course and with that of the average case as to arouse interest. The patient's disease began in 1914 with symptoms of intracranial pressure and optic neuritis. Later, secondary optic atrophy began. When he came to us in 1917 for failing vision, the com-

plaint of headache and pain was subordinate and was elicited only after we learned that the optic atrophy was secondary. It is now four years since the tumor was removed. Such great variation in the clinical course indicates a very different type of tumor. The microscopic examination of the fresh tissue at operation and many fixed sections since gave typical pictures of glioma (Broders).

Treatment of tumors involving the gasserian ganglion is beset with many difficulties. The severe and frequent pain which precedes, for a long period, any objective sign urges one to employ many inadequate measures for relief. The extraction of teeth, exploration of nasal sinuses, alcohol injections, specific treatment and the like, are used to meet apparent indications with almost uniform failure. It is strange with what frequency unrelated complications, such as syphilis, tuberculosis or meningitis, are found to be associated with this syndrome. The rarity explains largely the tardiness of recognition even after trustworthy objective signs have appeared. Thus it happens that, although only in early operation can we hope for satisfactory results, surgical interference is generally long delayed. Indeed, it is very doubtful whether endotheliomas of the degree of malignancy we have encountered can be successfully dealt with by surgical means.

Section of the sensory root offers relief from pain of variable degree and duration, and it may compensate in some measure for an otherwise futile exploration.

## CONCLUSIONS

1. Tumors involving the gasserian ganglion, by marked variation in the rate and extent of growth, display many combinations of signs and symptoms.

2. Anesthesia may not occur, or it may be profound. In two of four cases, moderate dissociation of pain and temperature were present.

3. Epitheliomas of the nasopharynx have produced this syndrome with about the same frequency as tumors arising within the skull.

4. Two distinct types of tumor were found. The endotheliomas were malignant and little influenced by surgical treatment. The glioma was benign and produced general symptoms of brain tumor; later it involved the gasserian ganglion. There are no signs of recurrence in this case after three and one-half years.

## ABSTRACT OF DISCUSSION

DR. PETER BASSOE, Chicago: As the gasserian ganglion is the homologue of the spinal ganglions, it is noteworthy that primary tumors of the latter are exceedingly rare as compared with the former. At this moment I can think of only one case, one of sarcoma of a thoracic ganglion reported by Sommerfelt of Norway. The reason for this discrepancy seems to be that the so-called gasserian ganglion tumors start elsewhere, usually in the dura, and later invade the ganglion.

DR. FOSTER KENNEDY, New York: Intracranial tumors which involve the gasserian ganglion usually take origin from the base of the skull; that is to say, the ganglion is assailed from below upward. The motor branch of the fifth nerve is placed below the sensory ganglion. It therefore happens inevitably that masseter and temporal muscle paralysis precede often by weeks or months the onset of ganglion pain. This palsy, being unilateral, gives almost no inconvenience to the patient, and unless especially looked for by the neurologist is apt to escape observation. Sarcoma of the skull base is rarely an operable condition; therefore, it is well to search carefully for its pathognomonic insignia. In the differential diagnosis between fifth nerve pain produced by irritation of the gasserian ganglion and that produced by irritation of the descending nucleus of the fifth nerve, the latter condition is often improperly ignored or forgotten.

DR. PERCIVAL BAILEY, Boston: I am interested in Dr. Shelden's presentation because of its bearing on the pathogeny, still so obscure, of trigeminal neuralgia. As is well known, alcohol injections or peripheral operation on the fifth nerve will stop the pain of trigeminal neuralgia. Because of this fact, one need not expect to find essential changes in the ganglions, and as a matter of fact no changes can be found. I should like to ask Dr. Shelden whether he knows of any case of tumor of the gasserian ganglion in which either alcohol injections or peripheral operation had any influence on the pain.

DR. G. W. HALL, Chicago: In occlusion of the posterior inferior cerebellar artery there is a definite sympathetic eye syndrome due to involvement of the sympathetic fibers at their central origin. These fibers probably pass through the gasserian ganglion. I should like to inquire of Dr. Sheldon whether any such syndrome was observed in his cases.

DR. CHARLES R. BALL, St. Paul: My experience with alcohol injections in neuralgic or neuritis conditions, aside from the true cases of tic douloureux, has been very unsatisfactory. The explanation for this has seemed to me to lie in the different conditions which cause the pain in a genuine tic and in cases of neuritis from whatever cause. In the former, the pain is elicited from a hypersensitive area, or what Dr. Patrick has called the trigger zone. In the latter, the pain is produced by the irritation in the nerve fibers themselves, which is of a more or less constant character. In injecting a nerve the seat of a neuritis, the alcohol must deaden the nerve itself in order to relieve the pain. In injecting for the relief of pain in a case of tic this is not at all necessary. If one succeeds in numbing the area called the trigger zone and thus cutting off the pathway of the impulse which induces the pain, the patient is relieved. As an example, one often sees a case of tic whose pain is felt in the distribution of the second branch of the fifth where the attacks are completely relieved by injecting the first branch where the trigger zone for that particular case is located. In general, alcohol injections for the relief of pain other than in tic douloureux should be discouraged.

DR. WALTER D. SHELDEN, Rochester, Minn. In reply to Dr. Bailey's question whether alcohol injections or peripheral operation had any influence on the pain in tumor of the gasserian ganglion, it did not. In one of the cases, after removal of the tumor alcohol injections were given without any influence whatever on the pain.

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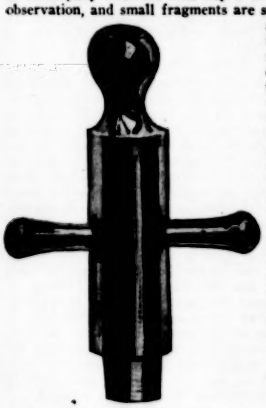
**Psychiatric Clinic for Maladjusted Children.**—The Cornell Medical College Children's Psychiatric Clinic has demonstrated not only the need for such a clinic, but also its usefulness. This is especially true in the case of neurotic children who show a wide variety of symptoms that can be understood and treated only by intensive study of each child and its home environment. In addition to the correction of physical defects, there is usually necessary, not only a reeducation of the child, but also a change in the attitude of the home toward the child. All this can often be accomplished through the clinic, with the necessary aid of the psychiatric social worker or the visiting teacher or any social worker who has an understanding of and a training in the principles of mental hygiene. For those neurotic children for whom, either because of their inherent neurotic disposition or of irremediable home conditions, a continuance in the home offers very little hope of improvement, the establishment of farm schools is urged by L. Blumgart (*Mental Hygiene* **5**:341 [April] 1921). The resultant improvement in the behavior of the children, following the change in their personal and physical environment, appears at the end of two and one-half years to be permanent in approximately 50 per cent. of the cases.

## Clinical Notes, Suggestions, and New Instruments

### AN EVACUATING ATTACHMENT FOR THE CYSTOSCOPE *

ROBERT SEVERANCE, M.D., NEW YORK
Instructor in Urology, Post-Graduate Medical School and Hospital

Having observed on two or three occasions the great efficacy of the Bigelow evacuator in cases of severe hematuria with clots of liver-like consistency, it occurred to me that it might be of advantage to have constructed an attachment which could be adjusted to the cystoscopic sheath and which, when connected with the evacuating bulb of the lithotrite evacuator, would obviate the necessity of the repeated introduction of the evacuator and reintroduction of the cystoscope. An additional advantage anticipated from such an attachment is that in litholapaxy when the final step is checked up by cystoscopic observation, and small fragments are still to be observed, this attachment will obviate the introduction and reintroduction of the cystoscope or evacuator, as the case may be, for the cystoscope will suffice both for examination and evacuation of débris. As a matter of actual practice, it has been found that the device here illustrated offers all these advantages. It is simple, readily attachable and convenient to carry. In view of the fact that the aforementioned observations are made as the result of the work of Dr. McCarthy on such occasions, the attachment is primarily designed for his cystourethroscope. At present it is adaptable only to this instrument; but if it proves of sufficient advantage, its adjustment to other cystoscopes will be simple, for in the event of universal sheath calibration, one attachment will fit all instruments of similar size.



Evacuating attachment for cystoscope.

### HERNIA OF THE APPENDIX WITH FOREIGN BODY PERFORATION OF THE HERNIAL SAC

ROBERT WILLIAM LANGLEY, A.B., M.D., LOS ANGELES
Intern, Los Angeles County Hospital

J. H., a man, aged 60, a janitor, walked into the examining room to have a nail removed which had perforated the scrotum on the right side. He stated that two years and eight months before he swallowed a nail. Shortly after he vomited and imagined that he had thrown up the nail. Four months later he was taken suddenly with a sharp pain in the right inguinal region which persisted for several minutes. Similar attacks had been a source of irritation to the patient for the last two years, but apparently had not been severe enough to force him to consult a physician. He had never complained of a diffuse abdominal pain or pain on defecation. During the last month the pain had been localized in the right inguinal region and, Saturday evening, May 7, 1921, the patient felt a sharp point protruding from the upper part of the scrotum. Further examination revealed a nail which he was not able to withdraw. Sunday the nail was still protruding, and Monday afternoon the patient came to the hospital examining room to have it removed. He refused to enter the hospital at that time, stating that he would return the following day. Tuesday morning the patient noticed that the nail had disappeared. He was admitted to the hospital the same morning. Wednesday a roentgenogram of the pelvis disclosed the nail in the right lower quadrant.

The patient stated that he had had a rupture on the right side since he was 9 years old. It had never given him any serious trouble.

Physical examination was negative except for a mass in the right inguinal region which gave a decided impulse on coughing. The tumor did not recede when the patient lay down. There was some induration of the tissues of the scrotum surrounding a small ulcer where the nail had perforated. The inguinal ring on the left side was large, but no hernia was found.

Fig. 1.—Appendix and mesentery showing nail in lumen of appendix.

The case was assigned to the surgical service of Drs. W. L. Huggins and W. A. Bayley. Thursday morning the patient was prepared for a right inguinal herniotomy. The hernial sac was exposed and found to contain the appendix and meso-appendix. The nail was found in the cecum and readily pushed into the lumen of the appendix. An appendectomy was performed, the hernia repaired and a usual closure made. No perforations could be demonstrated in the cecum through the herniotomy opening, and none were found in the appendix. Gross and microscopic examinations of the appendix were made by Drs. Hammock and Maner of the pathologic staff, and they were unable to demonstrate any evidence of acute inflammation. On gross examination of the specimen, Dr. Hammock found it to be infested with seatworms (*Oxyuris*

Fig. 2.—Roentgen ray showing nail in right lower quadrant.

* Demonstrated before the Urological Section, Academy of Medicine, March 16, 1921.

*vermicularis*). Fifteen worms were found within the lumen of the appendix.

The postoperative care was that of an ordinary hernia case, and with the exception of a superficial stitch-wound infection the patient made an uneventful recovery and was discharged from the hospital, Saturday, June 11.

COMMENT

Foreign-body appendicitis with perforation of the appendix by the foreign body is not so common as is generally supposed, according to Da Costa, who states that Ranvier collected the records of 459 postmortems and found reported 179 fecal concretions and sixteen foreign bodies.

In the case reported above there is a great deal of question as to whether or not the nail perforated the appendix. The probabilities are that the nail perforated the cecum while it was in the hernial sac and disappeared when spontaneous reduction of the hernia occurred.

Hernia of the appendix, while mentioned only in a general way in most surgical textbooks, is probably not a rare condition. Da Costa mentions Merigot de Treigney, who compiled twenty-two cases. In seventeen the hernia was inguinal; in five it was femoral. Da Costa himself operated in a case of appendicitis in which the inflamed appendix was the sole occupant of an incomplete right inguinal sac.

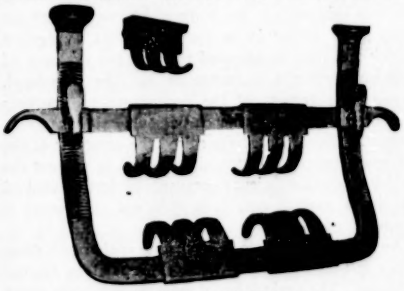
The occurrence of these conditions in the same individual, associated with the finding of *Oxyuris vermicularis* so high up in the intestinal tract, is quite unusual and of sufficient interest to warrant a report of the case.

1100 Mission Road.

## MULTIPLE BLADE RETRACTOR

ALFRED J. BUKA, M.D., PITTSBURGH

The needs in surgery for retraction and retention that may be regulated and uniform at all times, and still allow a clear field for inspection and operative work, occasioned the construction of the instrument here described. The assembly of this retractor is simple, there being nothing which will easily get out of working order.



Multiple blade retractor.

The desire to obtain a dip in incisions for retraction developed this construction so that a distinct concavity is utilized. With uniform concavity of the vertical bars directed downward (against the subject) the blades are allowed the easier access to incisions. Retraction is exerted through the blades, and it is immediately developed by an outward and upward expansion of the incision, when the horizontal bars are separated. Two sizes of blades are offered with this model, the smaller size for superficial and the larger size for deep retraction. The blades are removable from and movable on the horizontal bars, of which the proximal (the one nearest the operator) is adjustable. Retraction and retention are accomplished with the aid of parallel notchings on the vertical bars. A fairly liberal freedom of the movable horizontal bar is allowed so that retraction may be obtained at either end of an incision, of an even or uneven type. The fixing of the proximal bar after retraction, for retention, is accomplished by a dog on each end of this bar, which snaps automatically into the notches of the vertical bars at the points of desired retraction. By pressure on the thumb-pieces or head-ends of the vertical bars, and counterpressure with either the index or middle fingers, on the grips of the horizontal bar, retraction is developed.

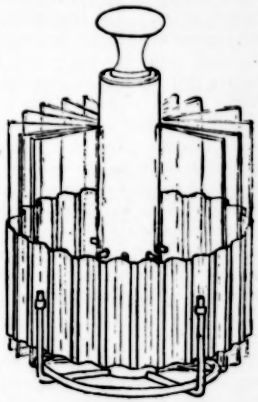
It may be increased as occasion demands by a similar procedure, while retraction with retention is released by pressure on the clip-ends of the dogs, when the instrument may be removed *en masse* from an incision. The advantages of the instrument are: clear field for operation, continuous and even retraction, retraction that may be varied as the operator desires, retraction which may be either superficial or deep, and retraction which may be accomplished in small or large openings. It allows the assistant to serve more actively during operative work, and permits more freedom for the operator. It establishes retraction with speed, and affords an admirable means for keeping the field for operation free from unnecessary hands and instruments.

Real Estate Savings Building.

## A NEW SLIDE STAINING RACK

W. L. ROBINSON, B.A., M.B., TORONTO
Pathologist, Toronto General Hospital

The advantage of slide racks for staining tissue sections or bacteriologic smears is not fully appreciated by most laboratories. They represent a great saving in time, and often enable one technician to do practically the work of two.



Slide staining rack.

The feature I particularly wish to emphasize in this rack is its compact, sturdy form and the fact that no special receptacles are needed for the solutions, ordinary glass jars with an internal diameter of not less than 8 cm. being all that is required.

This rack should be made of copper or monel metal. The center post, a copper tube, should have an outside diameter of 2.3 by 10.5 cm. length, with a knob or loop on the upper end to act as a handle. Four centimeters from the bottom, eight pegs or posts made of No. 12 copper wire and 0.6 cm. in length are soldered to the outside, like spokes of a wheel, equal distances apart. Two heavy copper wires about 15 cm. in length, size No. 12, are soldered at right angles to the bottom of the center post, and the ends turned up to support a corrugated band made of 16 ounce cold rolled copper 3.5 cm. in width and about 7.4 cm. in diameter, with corrugations 0.5 cm. deep. There should be twenty-four corrugations, allowing for twenty-four slides to be inserted. About the center post the slides come together, three between each pair of pegs. This rack can be used for any number of slides up to twenty-four.

The slides, as soon as the sections are cut and mounted, are placed in these racks to drain. The rack is then put in a paraffin oven. The xylene, alcohol and stains are kept in a large, wide-mouthed jar. The rack of slides is then passed from one jar to the other till the whole process of dissolving the paraffin, staining, dehydrating and clearing of the sections is complete. They are then lifted out of the rack one by one and mounted in balsam.

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SATURDAY, AUGUST 27, 1921

## HIGH PROTEIN DIET AND RENAL IRRITATION

High protein diet has frequently been charged in the past with harboring elements of danger to the human organism. By some of the advocates of "physiologic economy" in nutrition they are pictured as decidedly menacing, although a critical examination of the charges usually reveals indefinite generalities of the intangible type described as "undue liver activity" or "kidney strain." The propagandists for the low protein regimen as a scheme for promoting well being have repeatedly been reminded by their less enthusiastic colleagues that the human organism manifests a large "factor of safety" in its ability to dispose of surplus protein, as it does in various other aspects of physiologic function. The older idea that albumin which appears in the urine at times may be derived directly from food protein has been abandoned. Recently, convincing evidence has been furnished from the clinic that considerable variations in the intake of albuminous food are without noteworthy influence on the blood pressure of patients currently believed to be peculiarly susceptible to the assumed pressor effects of abundance of protein in the diet.[1]

At the University of Michigan Medical School, Squier and Newburgh[2] have reinvestigated the question whether a diet rich in protein can provoke renal irritation of a demonstrable sort. The observations were made on patients for whom evidence of incipient kidney damage already existed. Prolonged high feeding in these cases was actually followed by definite signs of renal disturbance. It resulted in the appearance of red blood corpuscles in the urine, and in the appearance of albuminuria or the increase of a preexistent condition of this sort. As might be expected, the high protein regimen caused the more marked or persistent disturbance in the acute or subacute stage of nephritic involvement. The Michigan clinicians discovered a definite increase in the edema and macular changes in the fundus after liberal ingestion of meat in some cases. The red cells disappeared from the urine after return to a lower plane of protein intake. Forced meat feeding during two successive meals was invariably sufficient to cause the temporary appearance of red blood corpuscles in the urine of healthy young men; in no case, however, was there detectable albuminuria. It should be emphasized that the lack of effect on the blood pressure, asserted by Mosenthal,[1] has been verified. On the other hand, in view of these studies the clinician must deal with the thesis that a high protein diet in man may be a renal irritant. Moschcowitz,[3] among others, has contended that hypertension is not an outcome of nephritis, but ascribes the arterial condition to continuous circulatory vasoconstricting influences. Whether and, if so, how kidney lesions result from hypertension remains to be learned.

1. Mosenthal, H. O.: Am. J. M. Sc. **160**: 808 (Dec.) 1920. The Alleged Harm from Protein in the Diet in Certain Disorders, editorial, J. A. M. A. **76**: 452 (Feb. 12) 1921.
2. Squier, T. L., and Newburgh, L. H.: Renal Irritation in Man from High Protein Diet, Arch. Int. Med. **28**: 1 (July) 1921.
3. Moschcowitz, E.: Hypertension: Its Significance, Relation to Arteriosclerosis and Nephritis and Etiology, Am. J. M. Sc. **158**: 668 (Nov.) 1919.

## THE SCHICK TEST AND IMMUNITY TO DIPHTHERIA

The Schick test for determining the degree of immunity exhibited by an examined person to diphtheria is no longer a novelty in medical practice. It is already being applied in many thousands of cases each year in this country; and many of those giving a positive reaction have been successfully immunized in the face of impending danger. Park of the New York City Board of Health asserts that the evidence that antitoxin is the only substance in the body which can prevent the toxin from acting is so conclusive that a negative Schick test may be assumed to mean the presence of sufficient antitoxin to neutralize it. The occasional, though rare reports of the appearance of tonsillitis of a diphtheritic character in persons who have given a negative Schick test have raised the question: Is the minimum amount of antitoxin required to prevent the Schick reaction sufficient to prevent the development of diphtheria and, if not, is it sufficient to prevent a toxemia?

An essential postulate in evaluating evidence on these topics is that the technic of the test shall be beyond criticism. The toxin injected must be accurately dosed and, as has repeatedly been pointed out by the experts in such work, it must be delivered wholly intracutaneously. Park,[4] who has had most exceptional experience in this connection, admits that from 2 to 4 per cent. of the persons ordinarily giving negative Schick tests may do so because of faulty technic; he insists, however, that when the procedure and dosage are correct such errors do not arise. It is undoubtedly true that "immune" persons may harbor diphtheria bacilli so that, if they chance to suffer from a tonsillitis due to other microorganisms, throat cultures may reveal diphtheria germs. Furthermore, Park admits that in unusual cases the

4. Park, W. H.: The Degree of Immunity to Diphtheria Insured by a Negative Schick Test, Am. J. Dis. Child. **22**: 1 (July) 1921.

latter, when present in a throat experiencing some other infection, may develop sufficient toxin to cause superficial lesions in the mucous membranes even when the system contains sufficient antitoxin to prevent the Schick reaction.

Such admittedly rare patients show favorable progress without antitoxin treatment. Accordingly, the upshot of the situation, in the light of present-day knowledge, is thus summarized by the New York bacteriologist: A negative Schick test in cases in which there is active immunity, either natural or acquired, when the toxin used and the technic employed have been suitable, gives an almost complete security from diphtheritic disease, not only for the immediate time but also for the future. This favorable comment should inspire confidence in the further application of the Schick test far more extensively than is the case at present.

## VARIABLE FACTORS IN HYPERTHYROIDISM

The overworked domain to which the name endocrinology has been applied in recent years is slowly beginning to yield some scientific fruits of permanent value. Foremost is the hormone or "active principle" of the thyroid gland, thyroxin, which has been described as "a catalyst that accelerates the rate of formation of a quantum of potential energy in the cells of the organism."[1] Hyperthyroidism thus becomes the clinical syndrome resulting from the presence of an excess of thyroid hormone in the body. Thyroxin has definitely been demonstrated to increase the basal metabolic rate. According to Plummer,[2] hyperthyroidism is the physiologic status of an individual otherwise normal when the thyroxin in the tissues is sufficient to hold the basal metabolism above normal. Consequently the estimation of the basal metabolism by the methods of indirect calorimetry now in vogue is destined to assume an important rôle in the clinic of thyroid disorders. However, there is something approaching real danger in the unfortunate fact that the intellectual training of those who operate the "metabolism apparatus" now widely offered for sale has not progressed so rapidly as has the simplification of the technic. As Benedict[3] recently remarked, the latter is dangerous when it makes it possible for a tyro to secure measurements which frequently neither he nor his associates are in a position to interpret intelligently, and from which it is possible for him to draw deductions that are not only erroneous but, since they not infrequently may influence for or against operative procedure, may actually be of serious harm.

One of the lessons that needs to be learned is the fact that hyperthyroidism is not the only possible cause of augmented metabolic rate. The latter must always be correlated with other clinical data. Not every patient with a basal metabolism 25 per cent. above the prediction figure has hyperthyroidism. As Means,[4] who has had a large experience with indirect calorimetry at the Massachusetts General Hospital, warns us, the high finding may have been due to some other disease, pernicious anemia or leukemia perhaps, or possibly to an unrecognized fever at the time the test was made—or even to inaccurate technic, if we may admit it.

Again, greater definiteness must be applied to the distinctions between the varied anatomic changes in the thyroid structure that are commonly grouped under the general expression goiter. In this respect it is becoming important to differentiate pure hyperthyroidism from exophthalmic goiter, since they are often looked on as essentially identical in character. Plummer[2] has pointed out that a definite symptom of hyperthyroidism is, with rare exceptions, associated with diffuse hypertrophic or adenomatous goiter, just as it follows the therapeutic administration of thyroxin. Whereas hypertrophic goiter is the anatomic expression of functional disturbance in the developed thyroid, an adenoma of the gland represents new tissue developing postnatally from the stimulation of embryonic cells. In either case—and the two types of goiter may be present in the same structure—the effects noted are essentially those attributable to an excess of the normal thyroid hormone. Recognition of this, in which the heightened basal metabolism assists, points the way to rational treatment, by removal of the adenoma.

The status of exophthalmic goiter is different. While it is in the main a hyperthyroid state, it cannot be attributed wholly to an excess of the normal thyroid hormone. Kendall,[5] who isolated and identified thyroxin, has suggested that probably there is, in exophthalmic goiter, a slight alteration in the thyroxin molecule. Adenomatous goiter and exophthalmic goiter have in common symptoms due to increased metabolic rates; but beyond this they differ materially. The simple adenoma does not give rise to the varied characteristic symptoms represented by exophthalmos, thrills and bruit, tendency to gastro-intestinal crises, and a peculiar type of nervousness. The estimation of basal metabolism will not suffice for the differential diagnosis, though it may materially assist in indicating the extent to which treatment has produced improvement in the patient. At present it is well to join Boothby[6] and Plummer[7] in insisting that we are dealing with two distinct diseases in exophthalmic goiter and in adenoma with hyperthyroidism. They have an unlike mode of onset, clinical course, duration of symp-

1. Plummer, H. S., and Boothby, W. M.: Specific Dynamic Action of Thyroxin, Am. J. Physiol. **55**: 295-296, 1921.
2. Plummer, H. S.: Interrelationship of Function of the Thyroid Gland and of Its Active Agent, Thyroxin, in the Tissues of the Body, J. A. M. A. **77**: 243 (July 23) 1921.
3. Benedict, F. G.: The Measurement and Standard of Basal Metabolism, J. A. M. A. **77**: 247 (July 23) 1921.
4. Means, J. H.: Determination of the Basal Metabolism as a Method of Diagnosis and as a Guide to Treatment, J. A. M. A. **77**: 347 (July 30) 1921.
5. Kendall, E. C.: Isolation of the Iodine Compound Which Occurs in the Thyroid, J. Biol. Chem. **39**: 125 (Aug.) 1919.
6. Boothby, W. M.: The Basal Metabolic Rate in Hyperthyroidism, J. A. M. A. **77**: 252 (July 23) 1921.
7. Plummer, H. S.: The Clinical and Pathologic Relationship of Simple and Exophthalmic Goiter, Am. J. M. Sc. **146**: 790, 1913.

toms and physical findings, as well as a difference in the pathologic condition of the thyroid. To account for these differences, the workers at the Mayo Clinic postulate that in exophthalmic goiter not only are the thyroid cells producing an excess of the thyroid hormone, but also the secretion so formed has some abnormal chemical property which produces the symptoms that differentiate it from pure hyperthyroidism.

## IMMUNIZING FUNCTION OF COLOSTRUM

Although it is characteristic of all mammals to secrete, for a few hours or days after giving birth to their young, a fluid quite different in composition from the milk that nourishes the young during the rest of their period of suckling, little attention seems to have been given to the purpose of this secretion. That such a universal phenomenon can be purposeless is highly improbable, and yet textbooks on obstetrics and pediatrics seem not to discuss it. If the colostrum is mentioned at all, beyond a description of its physical and chemical characteristics, only a laxative property is usually mentioned, attributed to the high protein content. Recent work on immunity contains suggestions of a much more important function.

That young infants possess a greater or less degree of immunity to various infections is generally recognized. Often this early immunity disappears, which indicates that it is of a passive character, and therefore to be attributed to antibodies obtained from the mother. Much experimental work has been done to determine how much transfer of antibodies from mother to fetus occurs, and by what route. The conclusion has been that the total transfer of antibodies to the fetus is usually small, and that it may occur either by intra-uterine absorption through the placental circulation or by alimentary absorption of antibodies contained in the milk, or by both routes. One of the most recent investigations of this sort, by Reymann,[1] disclosed that, at least in the case of agglutinins in goats, the young were usually born without agglutinin but acquired a considerable amount during the first days of life from the mother's milk. He found also that the milk is especially rich in these immune bodies in the first lacteal fluid secreted, i. e., colostrum, being commonly richer in agglutinins than even the serum of the same animal. The same thing seems to be true of antibodies other than agglutinins. The amount of immune antibodies in the milk falls rapidly during the first two or three days of lactation, and usually the later milk does not contain quantities large enough to be demonstrated.

These observations harmonize well with some other recent chemical and immunologic investigations on colostrum. Thus, Crowther and Raistrick [2] found that the high protein content of cow's colostrum depends chiefly on the presence of a large quantity of globulin, which constitutes an average of more than 50 per cent. of the total proteins of colostrum, being about 8 per cent. of the total weight of the colostrum and only 0.03 per cent. of later milk. Evidently, then, the colostrum differs from milk chiefly in having added to the casein and albumin a large quantity of globulin. The significance of this is brought out by a study of the immunologic behavior of the several protein constituents of milk by Wells and Osborne,[3] for they establish, in confirmation of earlier observations, that the globulin of milk is identical with that of the serum of the same species, whereas the other milk proteins are quite distinct from any of the other proteins of the serum. From these facts they make the suggestion that the formation of colostrum is for the purpose of presenting to the new-born infant a concentrated solution of serum globulin, which carries the antibodies of the maternal blood. Early investigators found that the mammal when newly born is able to absorb proteins from the alimentary canal in unchanged condition to a much greater extent than later when the digestive processes have become more developed, and hence the serum globulins bearing the antibodies are poured out by the mammary glands only during the brief period when they can be absorbed by the suckling in an active condition. In confirmation of this idea is the observation of Howell and Eby [4] that the antibodies in the maternal blood diminish after parturition. The inference to be drawn from these laboratory observations is that the colostrum is a peculiarly valuable material for the new-born infant, and that nature has provided it to help protect the infant against infections until such time as it can become more or less thoroughly actively immunized to the pathogenic microbes it meets after leaving the protection of its mother's womb.

## CARBON MONOXID ASPHYXIA

Carbon monoxid gas seems to be assuming greater importance than formerly as a source of danger through respiration. Long known as a toxic ingredient of illuminating gas, carbon monoxid has become familiar to hygienists in connection with the once frequent cases of "blowing out the gas light." While this menace to unsuspecting victims is becoming much less common with the altered conditions of living today, other sources of the introduction of carbon monoxid into the atmosphere breathed by man have arisen. The gasoline engine of the automobile represents an important agency of this sort; for there are various ways in which the products of incomplete combustion discharged with its exhaust may contaminate the air of buildings or other closed spaces with carbon monoxid among other undesirable substances.

1. Reyman, G. C.: J. Immunol. **5**: 227 (May) 1920.
2. Crowther and Raistrick: Biochem. J. **10**: 438, 1916.
3. Wells, H. G., and Osborne, T. B.: Anaphylaxis Reactions with Proteins from Milk, J. Infect. Dis. **29**: 200 (Aug.) 1921.
4. Howell, K. M., and Eby, H.: J. Infect. Dis. **27**: 550 (Dec.) 1920.

Carbon monoxid readily unites with hemoglobin and thus decreases the normal oxygen-carrying capacity of the blood. In this way an anoxemia arises and asphyxial conditions ensue. It becomes of great importance, therefore, to ascertain conclusively whether the gas exerts any toxic action independent of the anoxemia; in other words, whether carbon monoxid asphyxia is essentially comparable with the effects of the inhalation of low concentrations of oxygen. Haggard [1] has recently demonstrated, in investigations conducted at Yale University for the U. S. Bureau of Mines, that death under carbon monoxid asphyxia is due to failure of respiration. The anoxemia resulting from the formation of carbon monoxid hemoglobin induces excessive breathing and thereby leads to the elimination of an excessive amount of carbon dioxid. A few years ago this would have been regarded as a beneficent removal of a waste product of metabolism. Today, however, carbon dioxid is recognized as a stimulus to respiration; and the excessive loss of this gas from the blood may be as unfavorable as an undue accumulation, for the lack has a tendency finally to depress respiration as the hydrogen ion concentration of the blood is decreased.

It is now known that acute oxygen deficiency may produce a functional impairment of the auriculoventricular conduction in the heart. According to Haggard, oxygen deficiency, occasioned by carbon monoxid, even in advanced asphyxia is not in itself sufficient to cause impairment of auriculoventricular conduction. Following respiratory failure, however, the increased anoxemia from this cause may start the development of heart block through its various phases. Of practical importance is the observation that cardiac conduction can be restored to normal, after the development of such a heart block, by restoring respiration and rapidly eliminating the carbon monoxid by means of inhalations of carbon dioxid and oxygen. The evidence indicates that the impairment of cardiac conduction is due purely to anoxemia. Carbon monoxid exerts no direct toxic action on the heart. The prospects of successful resuscitation are increased through this knowledge. It is worthy of note, however, that illuminating gas evidently contains additional toxic substances which exert a stimulating action on respiration and thus may hasten the onset of respiratory fatigue or failure.

1. Haggard, H. W.: Studies in Carbon Monoxid Asphyxia, I, The Behavior of the Heart, Am. J. Physiol. 56: 390 (July) 1921.

**Babies' Welfare Association.** — The annual report of the Babies' Welfare Association of New York City shows that more than 15,000 children of needy families were cared for during 1920, and through the efforts of the association more than 12,641 mothers and new-born infants have received proper treatment and have been led to take advantage of the facilities offered by the baby health stations. Convalescent and fresh air care have also been provided for a large number of children, while more than 2,000 children whose mothers are forced to go to work have been placed in boarding homes certified by the city.

## Current Comment

### DANGER IN FILLING SILOS

The frequent reports of deaths from asphyxiation in silos call attention to a menace to human life of which the public seems not to be aware. A silo is essentially a tubular tank of considerable height, designed to contain green fodder, generally corn. The silo is usually provided with doors at intervals along the sides to provide ventilation and to facilitate the removal of the ensilage during the feeding season. As the silo is filled, these doors are closed. The immature corn is cut into small pieces by a cutting machine, and the chopped material is blown into the silo by a "blower" attached to the cutter. As soon as it is placed in the silo, the ensilage begins to undergo changes in a direction opposite to normal plant metabolism by which the oxygen content of the surrounding air is considerably decreased and the carbon dioxid content is largely increased. In some cases, nearly all of the oxygen is consumed. The carbon dioxid surrounding the particles of silage is supposed to be the principal preserving agent for the green fodder. If the doors immediately above the level of the silage are not kept open during the process of filling the silo, so as to allow for free ventilation, carbon dioxid is likely to collect in sufficient amounts during the night to endanger the lives of the workmen who enter the silo in the morning. Owing to the high density of carbon dioxid, it tends to collect at the surface of the silage so that workmen who sit or lie on the silage before the filling operation begins are much more likely to suffer than those who stand. Owing to the general lack of information concerning the possible dangers in filling silos, country physicians, whenever practicable, may well warn farmer patients who own silos relative to the danger mentioned.

### TUBERCULOSIS SANATORIUMS NEAR LARGE CITIES

The time has passed, it is hoped, when the hapless consumptive faced exile to the desert and mountains. Nearly every state in the Union has found within its own borders a salubrious location for a tuberculosis sanatorium. With a better understanding of the relation of climate to the treatment of tuberculosis, we now know that it is not necessary to go more than a few hours' ride from any large city in the United States to find a suitable location for such a sanatorium. The U. S. Public Health Service therefore is urging states, cities and counties to construct sanatoriums, that is, instructive institutions, conveniently located to the populations to be served in order that patients may receive the solace of frequent visits from friends and relatives. The establishment of additional conveniently located sanatoriums, however, is only part of the institutional care for which further provision must be and is being made. Hand in hand with the increase in sanatoriums, general hospitals throughout the United States are setting aside rooms or wards for tuberculous patients. This measure the U. S. Public Health

Service considers most important, as it not only would provide for the hospital care of large numbers of needy sufferers who are unsuitable for transfer to distant points or who are unwilling to be removed to remote hospitals, but also would do much to popularize treatment in the home climate, and to familiarize physicians with the early diagnosis and the effective treatment of the disease. Tuberculosis wards in general hospitals serve largely as diagnostic centers and clearing stations, and as shelters for the care of terminal cases. The plan of having all general hospitals accept patients suffering from tuberculosis was endorsed by the House of Delegates at the last session [1] of the American Medical Association. Together with the provision of sanatorium facilities convenient to large centers of population, the proposals constitute a practicable program on which the antituberculosis campaign may concentrate its present efforts to advantage.

### SCHOOLS FOR PUBLIC HEALTH OFFICERS

As announced on another page of this issue,[2] the Rockefeller Foundation has made an initial gift of $1,785,000 to the Harvard University for its school of public health. This gift not only will provide a suitable building for the school but also will permit the carrying on of more research and an enlargement of the courses of instruction for public health officers. An additional sum, not to exceed $500,000, is promised should the growth and development of the school require it. This is the second school of public health to receive generous aid from the Rockefeller Foundation, the other being the School of Hygiene and Public Health which, through the generosity of the foundation, was established at Johns Hopkins Medical School in 1916. There are now ten schools for the training of health officers, the first of which was established by the University of Pennsylvania in 1906. The others in order of their establishment are: Harvard University, Universities of Wisconsin, Michigan and California, Detroit College of Medicine and Surgery, University and Bellevue Hospital Medical College, Yale University, and Albany Medical College.[3] These schools have been established in recognition of the urgent need of improved opportunities for public health instruction. As a result the science of sanitation and public health will be more rapidly advanced and methods of teaching will be improved. Still more important, however, they provide facilities and instructors whereby medical students, physicians, engineers, chemists, biologists and others may fit themselves for useful careers in up-to-date public health work. There is no field in which efficient and thoroughly trained officers are more needed. It is hoped that the generous gifts provided by the Rockefeller Foundation will result not only in improved health officers but also in establishing a greater confidence and cooperation on the part of the general public in public health measures.

1. Minutes of the House of Delegates, J. A. M. A. 76: 1763 (June 18) 1921.
2. General News, this issue, p. 714.
3. Statements in regard to the courses in these institutions appear in the Educational Number of THE JOURNAL, Aug. 13, 1921, p. 538.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

### ALABAMA

**Personal.**—Dr. Lucien T. Lee, Huntsville, has been appointed director of the bureau of epidemiology of the state department of health to succeed Dr. James L. Bowman, who resigned to become city and county health officer of Montgomery County.

### ALASKA

**Hospital News.**—It has been reported that the new hospital at Point Barrow, the mission farthest north in North America, will be completed and ready for occupancy this summer. The hospital will not only minister to the Eskimos of that region, but will also be available to all the population from Demarcation Point to Point Hope. The hospital will be in charge of Dr. Henry F. Greist and his wife, a trained nurse.

### CALIFORNIA

**Chiropractor Claims State Law Unconstitutional.**—On the plea that the California state medical practice act, No. 2164, is class legislation, W. Frank Willis, a chiropractor, has filed an application in the United States district court asking that the state board of medical examiners be enjoined from enforcing the act as it relates to chiropractors.

### DISTRICT OF COLUMBIA

**Personal.**—Dr. Robert Y. Sullivan has been appointed gynecologist to Columbia Hospital for Women, to suceed Dr. Isaac S. Stone, who has resigned after thirty years of service. Dr. Stone has been made emeritus gynecologist by the board of directors.

**Dairy Regulations.**—The city board of health has issued an order that all persons selling milk from two or more cows shall be rated as dairymen, and must obtain a permit from the board of health before selling milk in the city. The order also provides that live steam must be used in cleaning the bottles to insure perfect sanitation. Personal inspection of all dairies will be made at frequent intervals.

### ILLINOIS

**Personal.**—Dr. Royal L. Eddington, Lacon, was recently elected president of the board of education, District Number 80.

**Physicians' Outing at Lake Maxinkuckee.**—Four hundred members of the Northside Branch of the Chicago Medical Society were the guests, August 16, of Culver Military Academy, at an outing held at Lake Maxinkuckee, Ind. The day was devoted to sports, one feature being an old-fashioned "hurry-up call" contest, in which each physician was required to harness a horse to a buggy and go to a fictitious patient.

### IOWA

**Personal.**—Dr. John P. Savage, Sioux City, has been appointed chief of the medical service training center of the Bureau of Vocational Education at Silver Springs, Md.

**Hospital News.**—Sunnycrest, Butte County's new sanatorium for the treatment of tuberculosis, was dedicated, August 13, and is now open for the treatment of patients.—Under the terms of the will of the late John H. Burns, filed at Huntington, Neb., the bulk of his estate was left to found a protestant hospital, to be called the John H. Burns Memorial Hospital, under the professional supervision of his friend and physician, Dr. Louis Townsend, Sioux City. It is believed that $150,000 will be available for the purpose.

### KANSAS

**Personal.**—Dr. Florence Brown Sherbon, head of the division of child hygiene of the state board of health, has resigned, to take effect, September 1, when she will take a position on the faculty of the Kansas University, where she will teach child welfare and allied subjects.

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## LOUISIANA

**Appropriation for Health Work.**—The state board of health is planning to establish a full-time staff for health work at Monroe. The International Health Board of the Rockefeller Foundation will provide $2,500, and the Ouachita Parish police jury has appropriated $2,500. The state board of health will spend $2,500, and it is expected that the city of Monroe will provide the remaining $2,500. This $10,000 fund will be spent for health work in the Ouachita parish and the city of Monroe.

**Ordinance to Prevent Spread of Communicable Diseases.**—The board of health, Morehouse Parish, at its last regular meeting, adopted an ordinance prohibiting any person suffering from a communicable disease from being employed as a teacher or janitor in any public school of the parish. The ordinance also requires teachers to furnish a health certificate from a registered physician addressed to the parish superintendent, certifying that they are not suffering from any communicable disease. The ordinance also prohibits the use of open receptacles for drinking water in schools, and also of dippers and cups. No teacher or pupil will be allowed to carry to school, or allow to follow, a dog or any other pet animal. The board of health has also adopted an ordinance prohibiting persons from working in bakeries, cafés, restaurants, hotels and at soda fountains if they have communicable diseases.

## MARYLAND

**Personal.**—Dr. Arthur J. Lomas, who recently resigned from the Johns Hopkins Hospital, has left for the West, and after a short trip will go to Iowa City as superintendent of the University Hospital, connected with the University of Iowa. Dr. Calvin H. Goddard, who succeeds him, has taken up his new duties as second assistant director and head of the dispensary.——Dr. Irmarita Kellers, a graduate of the 1921 class, Johns Hopkins Medical School, is spending the summer in London.——Dr. T. Caspar Gilchrist, Baltimore, en route to America on the *Albania*, went to the assistance of a fireman on the *Tamaqua*, bound for London, who had torn off his arm in a ventilating fan. Dr. Gilchrist had the man removed on board the *Albania* and operated on the patient at sea, saving his life.

## MASSACHUSETTS

**Personal.**—Dr. Francis O'Brien has been appointed superintendent of the Hampshire County Sanatorium, Leeds, to succeed Dr. Charles E. Perry, who resigned recently to take charge of a government tuberculosis hospital in California.

## MICHIGAN

**Personal.**—Dr. John Sundwall, director of students' health service and professor of hygiene and public health, University of Minnesota, has been made director of hygiene and public health in the newly established department of physical education in the University of Michigan. He will also become director of students' physical welfare for the Michigan school, and will assume his duties at the opening of the college late in September. An important feature of the newly organized division will be the training of teachers and supervisors of physical welfare for colleges, high schools and grade schools.

## MINNESOTA

**Poliomyelitis Epidemic.**—More than 400 cases and suspected cases of poliomyelitis are reported throughout the state. Physicians from the university and assistants to Dr. Albert J. Chesley of the health department have been sent to many sections of the state to check the spread of the disease.

## NEW YORK

**Health Conference.**—The annual conference of health officers and public health nurses of New York state will be held, September 13-15, at Cornell University, Ithaca.

### New York City

**Huntington Hospital Drive Ends.**—The final figures of the drive for the benefit of the Huntington (L. I.) Hospital netted over $30,000. Of this sum $25,000 is to be used for an extension to the hospital building.

**New Jamaica Hospital.**—Plans for the new Jamaica Hospital building, Van Wyck Avenue near Fulton Street, are about completed. The new structure will accommodate 122 patients and will cost $500,000.

**City Hospitals Open to Obstetric Cases.**—Bird S. Coler, commissioner of public welfare, announced recently that because of the high fee demanded by obstetricians he has decided to open the city hospitals for confinement cases as a means of relief to families whose incomes range between $2,500 and $5,000 a year. Mr. Coler states that the privately owned hospitals of Brooklyn and Manhattan have become purely business institutions, and that while the poor can receive free treatment and the rich can pay fees from $150 to $250, there is no place for the patient of moderate means to go and still retain self-respect.

## NORTH CAROLINA

**Negro Women in Health Drive.**—The Colored Women's Federation of Rocky Mount conducted a campaign of lectures, demonstrations and exhibitions, August 3-5, to instruct colored mothers in the better care of their babies. The movement had the approval and cooperation of the city health department.

**Southern Pediatric Seminar.**—A two weeks' course for general practitioners in the study of the child in disease and health was recently held in sections at Black Mountain, Saluda, and Asheville. The lectures were given by well known specialists, many of whom spend their vacations in this locality. Dr. William A. Mulherin, Augusta, Ga., is the head of the courses, and Dr. Frank Howard Richardson, Black Mountain, has charge of the local work.

## OHIO

**Meeting of Hospital Unit.**—The former members of Base Hospital No. 67, U. S. Army, will hold their second annual meeting at Cleveland, September 3-5. This unit was stationed at Mesves, France, during the war, and more than 50 per cent. of its membership lives in Ohio.

**State Association Committee on Health Appointed.**—Dr. Wells Teachnor, Columbus, president of the Ohio State Medical Association, on authorization by the council, pursuant to the request of the Ohio Public Health Association, has appointed the following committee to represent the position of the association on general health subjects: Drs. Charles W. Waggoner, Toledo, chairman; William D. Porter, Cincinnati; Daniel C. Houser, Urbana; James A. McCollam, Uhrichsville, and William A. Galloway, Xenia.

**Important Health Measure.**—The Talley-Chatfield law, which went into effect, August 16, gives the state department of health power to order improvements in public water supplies on its own initiative instead of acting on complaint of local authorities or on petition of voters, as before. It also requires analysis of public water supplies. The law was designed to safeguard against serious water-borne epidemics, such as the Salem typhoid fever outbreak of last year, caused by conditions which the state health department was at that time powerless to correct.

**Medical Expansion at Ohio State University.**—According to a recent announcement of the trustees of the university, Dr. Charles S. Hamilton has been made professor of surgery and head of the surgical department in the College of Medicine; Dr. Roy G. Hoskins, editor of *Endocrinology*, is to be professor in physiology, and Dr. Clayton S. Smith, formerly connected with Northwestern University and the government Bureau of Chemistry, has been appointed professor of physiologic chemistry and pharmacology. One of the ten new buildings listed on the university's expansion program, is the new hospital to be erected on the campus back of the site selected for the new medical science building which is also to be erected for the College of Medicine. The hospital will have a capacity for 300 beds and will be called the Lynne Starling Hospital, in honor of the founder of the old Starling Medical College. It is expected that work on the new hospital will be started in October. Another new building which is now being erected at a cost of approximately $70,000 is the Kettering Research Laboratory, which was made possible by the gift of Charles F. Kettering of Dayton.

## PENNSYLVANIA

**Personal.**—Dr. Thomas H. Newcome, Red Bank, while returning from a visit to a patient at Templeton, suffered three broken ribs and cuts about the face when the brakes on his automobile refused to work and the car catapulted down a steep grade. Dr. Newcome was taken to the Kittanning Hospital.——Dr. Jerome B. Rogers, surgeon in chief of the Pottsville Hospital, has been appointed chief surgeon of

the Philadelphia and Reading Coal and Iron Company, to succeed the late Dr. George Halberstadt.

**Physicians of Four Counties Meet.**—Fifty physicians of Mifflin, Juniata, Snyder and Perry counties held a meeting under the jurisdiction of the state medical society, August 17. The following papers were presented: "Medical Legislation," by Frederick L. Van Sickle, Harrisburg; "Infant Feeding," Dr. Henry R. Douglas; "Diabetes," Dr. John W. Eilenberger; "Pleurisy," Dr. F. C. B. Phillips; "Acute Abdominal Pains," Dr. George B. Stull; "Cancer, Radium, Roentgen Ray, and Knife," Dr. Harvey F. Smith; "Experience with Typhus in Poland," Dr. George R. Moffitt.

**Typhoid Fever Epidemic.**—Typhoid fever, which has been raging in epidemic form in Shamokin, Pa., for two weeks, has reached its peak, according to local health officials and physicians. The total list of victims has reached the 100 mark, but the number of new cases reported has dwindled from ten to two a day. There have been four deaths since the outbreak of the disease. Eleven cases have been reported at High Park, Pa., and Jeannette, Pa. The state department of health has notified public health nurses throughout the state to make efforts to obtain pure milk supplies in their districts, and at the same time efforts are being made to control the disease in all the districts by instructing the public as to the symptoms and precautions to be observed.

### Philadelphia

**Personal.**—Dr. Russell S. Wingfield, formerly an intern in the Stetson Hospital, was injured in a fire which destroyed the buildings occupied by the health clinic of the Red Cross in Saloniki, Greece, August 2.——The following physicians will comprise the staff of the Radium Clinic of the Philadelphia General Hospital, City of Philadelphia: Drs. Charles C. Norris, Jay F. Schamberg, John B. Carnett and Henry K. Pancoast.

## VIRGINIA

**Personal.**—Dr. John H. Baird, who was recently elected by Yale University as professor of neurologic surgery in their college in China, but at his request will not be called to enter upon his duties there for another year, has entered the U. S. Public Health Service as passed assistant surgeon with the rank of captain. He has been assigned to duty at Fox Hills, Staten Island, N. Y.

## TEXAS

**Hospital News.**—The new Missouri, Kansas and Texas Hospital, Denison, which was erected at a cost of over $300,000, will be opened September 1. Dr. Thomas J. Long, Denison, will be the superintendent.——It has been announced that a site has been purchased for the new Harris Memorial Methodist Hospital at Fort Worth. The building will be constructed at the cost of $1,000,000 and will contain 400 rooms, not including the many large wards incorporated in the plans. The present sanatorium will be turned into a maternity ward.

## CANADA

**Personal.**—Dr. Norman Anderson, Toronto, is spending the holidays at Cacouna on the St. Lawrence.——Dr. George W. Badgerow, C. M. G., London, England, is spending the summer in Toronto.——Dr. William Gallie, Toronto, has been appointed head surgeon of the Hospital for Sick Children, Toronto.

## GENERAL

**New England Surgical Society.**—The society will meet at Worcester, Mass., September 21-22.

**Legislation Introduced for Relief of Russia.**—A resolution, introduced by Senator King of Utah, would authorize the President to use army medical supplies for the relief of famine sufferers in Russia. Surplus army drugs, medicines and medical supplies to the value of $5,000,000 would be placed at the disposal of the sick and suffering people in Russia.

**Mississipppi Valley Conference on Tuberculosis.**—Illinois, Indiana, Iowa, Minnesota, Missouri, Nebraska, North Dakota, South Dakota, Wisconsin and Ohio will report at the ninth annual session of the Mississippi Valley Conference on Tuberculosis to be held, September 12-14, at Columbus, under the presidency of Dr. Walter McNab Miller, St. Louis. Among those who will address the conference are: Dr. Allen K. Krause, Baltimore, director of the Dow's Foundation for Tuberculosis Research, Johns Hopkins Medical School; Dr. Haven Emerson, New York, and Dr. James Alexander Miller, New York, president of the National Tuberculosis Association.

**American Electrotherapeutic Association.**—The thirty-first convention of the association will be held at Washington, D. C., September 7-10. Electricity will be the theme of the meeting, and the largest apparatus for electrical treatment ever assembled at a medical meeting will be shown. Dr. George Betton Massey, Philadelphia, the first president, will present a paper. The scientific program will include addresses by physicists of the National Bureau of Standards. Major-Gen. Merritte W. Ireland, Surgeon-General of the Army, Admiral Edward R. Stitt, Surgeon-General of the Navy, and Hugh D. Cumming, Surgeon-General, U. S. Public Health Service, will be among the speakers at the banquet.

**Personal.**—Dr. E. C. Yao, Shanghai, and Dr. K. H. Li of Soochow, a graduate of Tsinghua College of Medicine, China, both of whom received their diplomas from the University of Pennsylvania in June, after spending seven years in this country acquiring their medical education, sailed, August 11, from Vancouver, with forty prominent medical men and scientists, for Peking, China, to attend the dedication of the Peking Union Medical College and also the International Conference to be held there in September. Drs. Yao and Li will remain in China, Dr. Yao to specialize in surgical work and Dr. Li to devote his time to child welfare work from a medical standpoint.

**Gifts for Harvard's School of Public Health.**—It is announced that the School of Public Health of Harvard University has received an initial gift of $1,785,000 from the Rockefeller Foundation. This school, which was organized in 1910, gives a general course for the training of public health officers and special courses in preventive medicine, tropical medicine, and industrial hygiene. The work has been hampered, however, by a lack of adequate funds, and by uneven growth. This gift, therefore, will enable the school to provide opportunities for research, to unify existing courses, and to provide extended teaching facilities in public health administration, vital statistics, immunology, bacteriology, medical zoology, physiologic hygiene, and communicable diseases. Part of the funds will be used for the purchase and equipment of a building for the housing of the school. For this purpose the university hopes to secure an existing building adjacent to the medical school. The cost of maintenance and development of the school will be met from endowment funds in part set aside by the university and in part contributed by the foundation. The foundation's immediate appropriations to the project will aggregate $1,785,000. If the growth of the school seems to demand it, the arrangement provides for further sums to any amount which shall not exceed $500,000.

**Use of Alcohol at First Aid Stations, Dispensaries, Infirmaries, and Clinics, and by Visiting Nurses' Associations.**—According to a recent Treasury decision, Section 74 of Regulations No. 60, as amended by Paragraph 5, T. D. 3041, approved July 1, 1920, is further amended to read as follows:

Section 74.—*Use of alcohol at first aid stations, dispensaries, infirmaries and clinics, and by visiting nurses' associations.* A person conducting a manufacturing, industrial or other establishment of such proportions and of such character as to justify the maintenance of a first aid station for employees, may procure alcohol for other than internal use at such first aid station, such as for application to wounds after use of carbolic acid or tincture of iodine, making alcohol packs, sterilizing instruments, making solutions for external application, etc., in such quantities as may be necessary, provided the first aid station is under the direct supervision of a physician or a trained nurse responsible to the proprietor of such establishment for the proper safeguarding and use of any alcohol obtained under the provisions of this section. Alcohol may be procured at a dispensary, infirmary or clinic, for the uses stated in the preceding sentence, provided such dispensary, infirmary or clinic is under the immediate supervision of a duly qualified physician actively engaged in the practice of his profession. Alcohol may also be procured, for the uses stated above, by a visiting nurses' association, where the alcohol is in the custody of a trained nurse and is used only by trained nurses directly responsible to the officers of the association.

(a) The person in charge of a first aid station, dispensary, infirmary, clinic or visiting nurses' association procuring alcohol as stated in the preceding paragraph, must keep a record showing the amount of alcohol on hand at the beginning of a month, each quantity later received and date of receipt, the total quantity used during the month, the purpose for which used, and the amount on hand at the end of the month. This record must be in duplicate and signed by the person in charge. One copy will be filed at the premises where the alcohol is kept, and one copy forwarded to the director on or before the tenth day of the month succeeding that for which the entries are made. In case no alcohol is received or used during any month, the record referred to must nevertheless be kept, and a copy forwarded to the Director to show the quantity on hand, if any.

(b) In filing application for a permit to use alcohol at a first aid station in the manner outlined above, the proprietor of the establishment must indicate the number of employees in the establishment, the maximum quantity of alcohol which it is desired to procure during the calendar year, the specific purposes for which the alcohol will be used, and the name of the physician or trained nurse in charge of the first aid station. An application for a permit to use alcohol at a dispensary, infirmary, or clinic, or by a visiting nurses' association, must show the name of the physician or trained nurse in charge thereof who will be responsible for the proper safeguarding and use of any alcohol procured

pursuant to such permit, if issued, a full description of the work of such dispensary, infirmary, or clinic or visiting nurses' association, the maximum quantity of alcohol which it is desired to procure during the calendar year, and the specific purposes for which it will be used.

## LATIN AMERICA

**Physicians in the Brazilian Congress.**—The following physicians have been elected members of the Brazilian Congress: Profs. C. Fraga and P. Mendes, from Bahia, and Profs. A. Sodré, A. Austregesilo and Dr. M. de Medeiros from Rio de Janeiro.

**Foundation of Two Medical Societies in Brazil.**—The *Folha Medica* announces the organization of the Associacão Medico-Cirurgica Fluminense at Nictheroy, with election of Dr. Geraque Collet, president; Dr. Dario Callado and Dr. Tavares de Macedo, vice presidents; Dr. C. da Fonseca, Dr. Lemos Duarte and Dr. Vital de Mello, secretaries; Dr. Eurico Bastos and Dr. D. Costa Velho, treasurers, and Dr. P. da Veiga, director of the museum.——The profession has also organized at Campos, founding the Sociedade Fluminense de Medicina e Cirurgia.

**Memorials to Physicians in Havana.**—In the News department of THE JOURNAL, July 23, 1921, p. 295, it was stated that it was proposed to erect in the corners of Finlay Park, Havana, statues of the three members of the commission which with Dr. A. Agramonte confirmed the transmission of yellow fever by the mosquito. According to a letter just received from Dr. J. Le-Roy y Cassá of Havana, the busts—not statues—that are to be placed there are of Dr. Gorgas, Dr. J. Guiteras and Dr. C. Delgado in addition to the bust of Dr. Lazear, the martyr of the yellow fever research work. The busts are already being made. The statue of Dr. Carlos J. Finlay stands in the center of the park and was recently unveiled.

## FOREIGN

**Department of Health for Japan.**—In order to bring the various health organizations of the empire under one department, there has been introduced, in the Japanese house of representatives, a bill to create a department of health.

**Research on Diphtheria Bacillus.**—The recent graduation thesis at the University of Lyons of Dr. P. Durand presented the results of research on the Douglas Flattery Foundation at the Bacteriology Institute at Lyons, France. Research on antiserums and vaccines for diphtheria and tuberculosis is also being pushed by Dr. P. Courmond.

**Visual Disturbance After Loss of Blood.**—Dr. Terson of Paris has been commissioned by the French Société d'Ophthalmologie to collect data on the effect on vision of losses of blood. He is appealing to confrères in general, civilian and military, for records of cases they may have observed, and the treatment followed. Address M. Terson, 47 boulevard des Invalides, Paris, France.

**Memorial to Roentgen-Ray Victim.**—A memorial tablet was recently placed on the house at Enghien-les-Bains, formerly occupied by the radiologist, A. Leray, who succumbed last spring to the effects of roentgen-ray injury acquired during his work for the wounded during the war. M. Leredu, ministre de l'hygiène, unveiled the tablet and addresses were made by the mayor and others.

**Personal.**—Prof. T. Rovsing of Copenhagen has been elected an honorary member of the Edinburgh Medico-Chirurgical Society.——The *Medizinische Klinik* states that Prof. P. Uhlenhuth, formerly director of the Institute for Hygiene and Bacteriology at Strasbourg, has assumed the supervision of the "Emil Behring" Institute for Experimental Therapy of the University of Marburg.

### Deaths in Other Countries

Dr. **H. Eichhorst,** professor of special pathology and treatment and director of the medical clinic of the University of Zurich, author of several textbooks on clinical medicine, aged 72.——Dr. **E. P. Rueda** of Buenos Aires.——Dr. **J. de Andrade Gramaxo,** professor emeritus of internal pathology at the University of Porto, Portugal, aged 96.——Dr. **H. Lajoux,** formerly professor emeritus of the medical school at Rheims, aged 73.

## CORRECTION

**Results in the Treatment of Acute Poliomyelitis.**—In the article by Dr. E. C. Rosenow, THE JOURNAL, August 20, in the last line of the sixth paragraph on page 589 the words 6.4 per cent. should read 67.4 per cent.

**Medical School in Acceptable List.**—Through an error the University of Arkansas Medical Department was shown as being rated in Class B on page 528 of the Educational Number of THE JOURNAL, Aug. 13, 1921. Its correct rating, however, is shown in the lists of medical schools appearing on pages 544 and 545.

# *Government Services*

### Change in Medical Personnel of Veterans' Bureau

The director of the Veterans' Bureau has appointed Lieut.-Col. Robert U. Patterson, M. C., detailed by the War Department, as medical executive officer in charge of administration and executive medical work of the bureau. John D. Lung, surgeon, U. S. P. H. S., has been detailed to the office of the director to take up the question of an epileptic colony for beneficiaries of the bureau. The request for relief from duty in the bureau by Col. Henry H. Shaw, who has been chief of the War Risk Insurance, section on hospitals and inspection, has been approved, and the resignation of Dr. Haven Emerson, medical adviser, Veterans' Bureau, will take effect September 1.

### Army Medical Department Encourages Necropsies

Surgeon-General Ireland has issued instructions to medical officers of the Army to perform necropsies, whenever possible, and to forward all types of pathologic material to the Army Medical Museum. A special course in pathology will be made a part of the basic course given at the Army Medical School in the future in which these specimens will be used for study. It is urged on all officers performing necropsies that each one is of sufficient importance to justify a complete protocol being written in duplicate, whether tissues are collected or not. During the World War the pathologic section of the laboratory service in France required that one copy of all necropsy protocols be sent to the headquarters laboratory in Dijon. In the brief period that American troops were in that country over 15,000 necropsy protocols were collected. Practically all of these protocols include brief clinical notes on the case.

### United States Veterans' Bureau

A resolution introduced in Congress and passed by the Senate provides for the change of the name of the Veterans' Bureau, established by the Sweet act, to the "United States Veterans' Bureau." The reason for the change in the name is the fact that the American Legion has a branch of its organization with the title of "Veterans' Bureau" and confusion in the mails has already resulted. The new United States Veterans' Bureau started in operation on August 9, after the measure had passed both houses of Congress and had been signed by the President. The appointment of Colonel Forbes, former head of the Bureau of War Risk Insurance, as director, was approved by the Senate.

### Public Health Service Aids Pellagra Prevention

The U. S. Public Health Service has commenced a system of cooperation with demonstration and county agents in the states of the South in spreading propaganda on the prevention of pellagra. All of these agents are being furnished with leaflets and pamphlets on the relation of diet to pellagra for the purpose of distribution among the tenant farmers of the South. Surgeon-General Cumming has also issued instructions for attendance of public service officials at all the conventions of agents and demonstrators that are to be held during the coming year. These officials will deliver lectures to the delegates on pellagra and preventive methods. The first state convention will be held at Gainsboro, Fla., Sept. 5, and the second at Blackburg, Va., October 15.

### Public Health Service Exhibit at Cincinnati

U. S. Public Health Service officials will present an extensive health exhibit at the coming Cincinnati Health Exposition, to be held, October 15 to October 22. The exhibit will be similar to the one recently presented at the Pageant of Progress at Chicago.

# Foreign Letters

## LONDON

*(From Our Regular Correspondent)*

Aug. 1, 1921.

### Gestation of Three Hundred and Thirty-One Days Allowed

The possibility of prolonged gestation has once more come before the courts. The case is important, as evidence was given by the leading authorities, so that the case constitutes the most recent pronouncement in English obstetrics. A man prayed for the dissolution of his marriage on the grounds of his wife's adultery with an unknown man. He was a soldier at the time, but was granted leave of absence from Sept. 29 to Oct. 4, 1918, when the last coitus took place. He did not return home until September, 1919. September 1, his wife gave birth to a child. The lapse of time from coitus to birth was 331 days. No evidence was adduced of misconduct on the part of the wife. The claim for relief was based on the impossibility of gestation extending to 331 days. The judge (the lord chancellor) adjourned the hearing and referred the case to the attorney-general with a request to attend as *amicus curiae* to argue the matter and call further medical evidence. The medical witnesses were nominated by Sir Francis Champneys, president of the General Lying-in Hospital and chairman of the Central Midwives Board.

Prof. Henry Briggs, president of the Obstetrical and Gynaecological Section of the Royal Society of Medicine, gave evidence that the longest period of gestation he had known was 306 days. It was impossible to fix an outside limit to the period of gestation. Dr. J. S. Fairbairn, obstetric physician to St. Thomas' Hospital, said that, taking the patient's information as correct, the longest period of gestation that he had known was 315 days from the last menstruation. The labor was prolonged and the child had to be delivered by cesarean section. Von Winckel had recorded a case in which birth occurred 336 days after the last menstruation, and that was calculated to 315 days from conception. From the scientific point of view he could not say that 331 days was an impossible period, but he would reject a history of 331 days unless signs of prolonged gestation plainly appeared in the child. Dr. Thomas Watts Eden, vice president of the Obstetric Section of the Royal Society of Medicine, gave evidence that in his personal experience he had cases in which, relying on the dates supplied by the patients, gestation had been prolonged for 305, 300 and 298 days after the last menstruation. He was not prepared to say that 331 days was an impossible period. The physician who attended the patient in her confinement was then recalled. He said that the child was exceptionally large and the labor was prolonged. He did not weigh the child at birth, but judged that it weighed 11 pounds.

The attorney general referred to the reported cases in which the period of gestation had been prolonged. In *Bowden* v. *Bowden* (1917) the number of days was 307, and the judge (Horridge) decided in favor of legitimacy. In the Gardner peerage case (1824) the period was 312 days and the decision was against legitimacy. Excepting the case of *Bowden* v. *Bowden*, no case had been decided entirely on the evidence of the duration of gestation.

In delivering judgment, the lord chancellor said that the only evidence of adultery was the abnormal length of the pregnancy. He could find the respondent guilty only if he came to the conclusion that it was impossible, having regard to the present state of medical knowledge, that the petitioner could be the father of the child. The expert evidence showed that there was no such impossibility. He therefore accepted the evidence of the respondent that she had not committed adultery, and dismissed the petition.

### International Tuberculosis Conference

The second conference of the International Union Against Tuberculosis has been held in London, under the presidency of Sir Robert Philip of Edinburgh. In all, thirty-nine countries were represented. Of the enemy countries of the late war, Austria was represented but not Germany or Prussia. At meetings of the council of the union, resolutions were passed on the motion of Prof. Léon Bernard, urging all governments to vote large sums to promote preventive measures against tuberculosis, and, on the motion of Professor Rénon, pressing for the establishment of tuberculosis as a subject of special teaching in the medical schools of all countries in order that physicians might be instructed in the precise diagnosis of the disease and the means of combating it. It was resolved to meet in Brussels next year, and in Washington the year following.

#### THE CAMPAIGN IN ENGLAND

Sir Alfred Mond, minister of health, described the work of his department. In England and Wales there were now 341 tuberculosis officers, 412 dispensaries and 18,050 sanatorium beds. These beds had increased by 4,000 during the last two years; and during the next two years, with the completion of the buildings now in progress, 3,500 additional beds would be available. In 1914 there were 99,000 notified cases of tuberculosis and 50,000 deaths; in 1920, 73,000 notified cases and only 42,000 deaths.

Col. George E. Bushnell (U. S. Army) said a basic fact was that the large majority of civilized mankind were infected with tuberculosis. That they did not die of it was the best of proof that tuberculosis was not necessarily an evil. Might it not, indeed, be that the salvation of the people was to be sought in an optional tuberculization? The hope of entire freedom from infection with tuberculosis was surely illusory under present conditions. The existence of the International Union Against Tuberculosis showed that its leaders were alive to the advantages of international cooperation in the study of tuberculosis. Under its leadership might they not look forward to standardizing their knowledge, to compelling the assent of the world by the accumulation of mountains of proved objective facts, so that some of the problems of today should become the truisms of tomorrow, and that there might be laid, broad and deep, everlasting foundations on which their successors should go on to build a perfect structure.

#### MODES OF DIFFUSION

Prof. A. Calmette of the Pasteur Institute opened a discussion on the modes of diffusion. He said that tuberculosis attacked all human races. People who had been isolated geographically or commercially, and had thus been protected, proved on exposure to be the most susceptible, whereas the older civilized races were the most resistant. Tuberculosis, in the words of Krause, was the price paid for civilization. He emphasized the part played in the diffusion of tuberculosis throughout the world by healthy carriers of tubercle bacilli. The recently acquired knowledge of this unexpected danger from individuals with occult tuberculosis made the organization of social defense much more difficult than when prophylaxis had to be based only on the education and isolation of phthisical patients. While the latter were by far the principal factors in dissemination, humanity must be warned against the possibilities of infection from innumerable individuals, apparently perfectly healthy, and, in fact, only slightly infected with lesions limited to a few glands. Such lesions might remain indefinitely latent, yet those who harbored them might be capable of contaminating their environment. Countries still comparatively free from tuberculosis could be protected only by organizing a system of detection based on both tuberculin tests and clinical examination of the glandular system, mainly by means of roentgenoscopy. Suspected indi-

viduals could not be prevented from living with the healthy, but by supervision and education they might be rendered harmless. This was the goal toward which all countries should strive.

THE MEDICAL PROFESSION AND PREVENTION

Sir Humphry Rolleston opened this discussion. He said that physicians were in a position to diminish and prevent infection, to improve the resistance of the people, and to promote hygienic education. The physician in his ordinary practice was the first line of defense against this and all other forms of disease. The worker in special branches of research was also of great potential importance in tuberculosis prevention, while the physician attached to the teaching hospital had a great responsibility in forming the outlook of the future physician in regard to this question. But as a member, leader and adviser of the general public and of municipal bodies, the physician could also exercise a vast influence. A periodic census of all persons should be taken so as to classify them by means of von Pirquet's test, segregating those with open tuberculosis, not only temporarily in sanatoriums, but perhaps permanently in village industrial settlements, and placing those with latent infection under medical supervision.

Sir George Newman, chief medical officer of the ministry of health, emphasized the importance of notification. The failure of a number of physicians to notify their cases when first diagnosed was a serious handicap, and some steps would have to be considered for insuring compliance with this compulsory regulation unless great improvement was effected. The dispensary, under the guidance of the tuberculosis officer, should be the consultation center for the neighborhood. One of its chief functions should be to afford facilities for early diagnosis; it should be also a center for treatment, so far as the appropriate treatment might be prescribed there, and also in that any particular treatment could not be properly undertaken by a general physician. Residential institutions would be included in a complete scheme, with sanatorium schools for the young and training sections where patients with more or less arrested disease might be "hardened up." After-care work was important, and included not only general supervision but also study of environment. A complete government scheme would also include research work, and every worker in the prevention of tuberculosis should regard himself as, ipso facto, an investigator. Finally, the health officer had important functions, and there should be most harmonious cooperation between him and the tuberculosis officer and a close coordination of the institutions and methods they represented.

Prof. C. E. A. Winslow said that in America they looked to France instinctively for the theory of tuberculosis, and to England for ideas as to administration, and they were not disappointed. Col. G. E. Bushnell deprecated the too early devotion of the medical student to a specialty. He considered it a great mistake also that physical diagnosis was not first learned on the normal chest. Dr. Minor (of the United States) held that in the last analysis the problem was a social one even more than a medical one. It was the problem of educating a more intelligent race. The essential factor was not so much the strength of the invading organism as the resistance of the host. Several speakers appeared to think that the physician should engage wholeheartedly in social and propagandist work. Dr. Eric Pritchard said that since a tubercle-free environment was a dream of Utopia, the best strategy was to aim at a population which should be tubercle-immune or resistant, and to do this a beginning had to be made with the infant. The opportunity at infant welfare centers of detecting cases of infection was so great that it should be an instruction to officers in charge of those centers to send such cases to the tuberculosis dispensaries.

SAVING CHILDREN: THE GRANCHER SYSTEM

Dr. Armand Delille of Paris described the system of the late Professor Grancher for protecting children. When a parent is found to be affected, the children while still healthy are removed to the country, where they are lodged with peasants for several years. Out of 2,300 Parisian children thus dealt with since 1903, only seven had become tuberculous and two had died of meningitis. Branches had been started in twenty of the principal cities in France, and there would soon be one in each of the eighty-nine departments working in connection with the Departmental Committee for Assistance to the Tuberculous, and complementary to the work of the Calmette Dispensaries. The "Œuvre Grancher" was a work of private charity, but the French government realized its importance, and gave a large grant to it, as did also the city of Paris and different cities where there were branches. The Grancher system was the most useful, the least expensive, and the most radical and successful method of fighting tuberculosis. Indeed, it stopped the disease in all families in which it was applied.

## PARIS

*(From Our Regular Correspondent)*

July 21, 1921.

### Congress of History of Medicine

The second international congress of the history of medicine, which has just been held in Paris, adopted the following resolutions: 1. An international association of the history of medicine is hereby created, and its permanent committee will meet in Paris. 2. The next congress will take place in London, in 1922. Besides various minor communications, two principal questions will be discussed, for which essayists will be appointed in different countries.

### Pyelography at the Urologic Congress

This method of exploration, first used in 1906, has been rapidly improved, especially in America. The accidents, which were frequent at the beginning, are mostly due to a faulty technic. They can be prevented if the greatest care is used in connection with catheterization and injections; if only small catheters are employed, allowing the reflux of the liquid, and if the syringe is eliminated. Collargol is still the most commonly used liquid. Dr. Papin prefers crystalloid solutions and especially a 30 per cent. sodium bromid solution. Drs. Young and Waters emphasized in their report the importance of taking the pyelograms in the horizontal as well as in the vertical position (patient seated), in order to show conspicuously renal mobility and ureteral bends, and also sometimes in the Trendelenburg position, especially to prove the presence of open ureteral orifices and of the vesico-ureteral reflux. Though pyelography may find its principal application in the diagnosis of hydronephrosis, we must agree with Papin that floating kidney, the anomalies of the kidney and ureter, and reno-ureteral lithiasis have greatly benefited through the use of this method. It facilitates also the diagnosis of tuberculosis, which is recognized at the start by erosions of the renal pelvis, by the formation of cavities and, occasionally, by the precipitation of lime salts showing very pronounced shadows. Finally, in renal tumors, pyelography is often the only means of diagnosis. Dr. Genouville of Paris emphasized the importance of pyelography in the diagnosis of reno-ureteral calculi. He contends that two roentgenograms are necessary: one of the calculus alone and the other of the calculus with pyelography. Comparison and superimposition of the two plates permit one to locate the calculus exactly with reference to the renal pelvis. Genouville was able by this method to determine accurately the site of an intrarenal calculus in an aged woman whose general condition was bad. If this calculus had been enclosed in

the pelvis, it would probably have entailed the blocking of the ureter, whereas it is tolerated in the kidney without inconvenience to the patient. Thus, pyelography saved the patient from undergoing an operation from which she would not have derived any important advantage.

## MADRID

*(From Our Regular Correspondent)*

July 21, 1921.

### Cajal

Cajal, the most famous of Spanish biologists, has been forced into the spotlight of publicity when he least expected it, and in fact, much against his will. Basing his action on the fact that Cajal will soon retire as professor of normal and pathologic histology in the School of Medicine of Madrid, Dr. Van Baubergen, a member of congress, introduced a bill providing, first, that Cajal should be appointed honorary dean of all Spanish medical schools and, second, that he should be granted an annual pension of 25,000 pesetas (about $3,200) during the remainder of his life. As the bill had not been introduced in the usual way, the minister of public education was taken unawares. While endorsing its first paragraph, he added that the pension could not be granted, as it would violate the budget law. The matter was put to a vote and, as might be surmised, the house sided with the minister. This was the starting point for a campaign on behalf of Cajal. Cajal himself tried to put a stop to it, publishing a letter in which he said, among other things, "I would consider myself very ungrateful if I overlooked the fact that I am a spoiled child of fortune. I owe much, very much, to foreign countries, but I also owe a great deal to the government that has rewarded very generously my efforts and those of my pupils, establishing for us an official laboratory." And further on, "The legend of the poverty-stricken and neglected researcher has no application in my case." Cajal asked in his letter that, rather than granting him a pension he does not need, they should increase the funds for the Cajal School. The government accepted the suggestion and increased by 50,000 pesetas (about $6,500) the annual appropriation for the school.

### Antimalarial Campaign

Professor Sella, the Italian sanitarian and chief of the antimalarial service of the League of Red Cross Societies of Geneva, is lending his cooperation in the work that the Spanish Commission for the Sanitation of Malarial Regions is conducting in some towns of Extremadura. In connection with this subject, Professor Sella gave an important lecture last week. He emphasized the seriousness of malaria in Spain since it causes a death rate of 11 per hundred thousand inhabitants, and in some provinces of even 107.1 per hundred thousand. The number of malarial patients can be estimated as being from 300,000 to 400,000. He reviewed the methods employed in different countries to combat malaria. Italy was the first to begin this work, attacking the problem from the standpoint of the patient and employing quinin as a prophylactic and a remedy; on the other hand, in the United States the attack is aimed at the mosquito through the destruction of larvae, oiling, drainage and the breeding of larva-eating fish, such as the Bureau of Fisheries of the United States has sent to Spain. Either method alone is inefficacious. He referred to the expenses incurred which, however, were overcompensated by the benefits obtained. But usually, local resources are inadequate for the sanitation of a region. The central government must help, and hence the need of antimalarial legislation, such as Italy originated. In that country, however, the mistake was made of centering only on the patient and not extending the campaign to other fields. Sella believes that the ideal consists in starting local campaigns which the general government should assist to the extent of bearing 25 per cent. of the expenses. Demonstrations make it possible to develop experts while training a body of assistants, which is precisely the hardest to secure. This is so well known that a famous professor said it was easier to get the money for an antimalarial campaign than trained assistants to carry it out. In Italy the bureau of public health has established a school of malaria prophylaxis. Finally, Sella discussed the scarcity of quinin, which is one of the greatest economic difficulties found at present. Quinin during the war sold at 600 francs a kilogram, and then decreased in price to 200 francs. When everybody expected that it would go down to its prewar price of 16 francs a kilogram, an agreement made by the Java planters, who produce 90 per cent. of all quinin sold in the world, threatens to keep up the price indefinitely. This seems to be a subject for consideration in an international conference. Perhaps chemistry may solve the problem. Quinin represents a very small fraction of the alkaloids available in the cinchona bark, and chemists might either transform the other alkaloids so that they might become useful, or produce a synthetic quinin. It is well known that Knoll discovered antipyrin while searching for a synthetic quinin. The experiments made in India have shown that the alkaloids associated with quinin, even when not transformed, have their uses, since cinchonidin and quinidin seem to be more active against tertian fevers than quinin itself.

## BUENOS AIRES

*(From Our Regular Correspondent)*

June 29, 1921.

### Influenza

We have actually suffered an epidemic of influenza during the month of June, synchronizing with a low temperature, even — 3 and — 4 C. (about 25 F.) and changeable weather. The number of cases increased so rapidly that both national and municipal sanitary authorities were compelled to take emergency measures. The federal government and some city authorities closed the schools from June 23 to July 21. Public amusement places and street cars were disinfected almost daily. The fact that 700 motormen were taken sick caused the temporary crowding of a limited number of passengers into each street car. So far the mortality has not been very high, since in the first twenty-five days of June there were in this city 2,070 deaths, i. e., only 340 more than in the same period during 1920. Most deaths have been from bronchopneumonia. Pneumococci, streptococci and Pfeiffer's bacilli have been demonstrated in the sputum.

### Malaria

The floods caused by the heavy rains in El Chaco which accompanied our recent Indian summer have caused a malaria epidemic in El Chaco, Misiones and Formosa, and some foci in Corrientes and Santa Fé. In many of these places malaria was not endemic before. The national department of health sent to these places commissions headed by Drs. Alonzo Mugica and Falcón to take charge of the treatment and prophylactic measures.

### Tribute to Rawson

The Academy of Medicine held a special session to celebrate the centenary of Dr. Guillermo Rawson's birthday. There were other public functions in connection with this anniversary in which the national government also participated. Rawson was born in San Juan, his father being an American physician, Dr. Aman Rawson. After distinguishing himself in school he devoted himself to politics, being one of the members of the constitutional assembly, member of congress and of the cabinet, but he is most famous as a professor and sanitarian. All the hygienists who have worked in this country were his pupils and owed much to

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his inspiration. In his lectures he set forth most clearly all great public health problems of Argentina, many of which have already been solved according to his suggestions.

### Professor Güemes' Retirement

Dr. Luis Güemes, professor of clinical medicine and the most famous clinician in our country, has just resigned. He has been appointed honorary professor in the school of medicine and in addition the ward in his charge in the Hospital de Clinicas will be named after him. The officers of the school of medicine have recommended the assistant professor, Dr. Pedro Escudero, to take his place.

### Diphtheria Antitoxin

Dr. A. Sordelli has succeeded in obtaining diphtheria antitoxin of a very high potency in less than a month, injecting old horses twice a week with increasing doses of very active diphtheria toxin, beginning with 1 c.c. He has employed this method in many horses, saving both time and money and greatly simplifying the technic.

## MEXICO

*(From Our Regular Correspondent)*

Aug. 7, 1921.

### Restrictions on the Practice of Medicine

The states of Hidalgo and Sonora must be added to the list of those which have issued regulations on the practice of medicine pursuant to Article 4 of the constitution. In both of them, persons lacking proper diplomas will not be permitted to practice medicine as done heretofore. The Sonora law requires, in addition, that physicians graduated from foreign colleges must furnish satisfactory proof of their competence and know Spanish sufficiently well unless their diploma has previously been approved by a Mexican school. Meanwhile, so far as medicine is concerned, anarchic conditions still prevail in the federal district and territories, and the exploiters of human suffering are having a sort of contest to see which of them can obtain more notoriety. Some have even advertised cures for impotency by means of injections of goat and bull serums. We have also received our first shipment of chiropractors, who are trying to perform all kinds of miracles.

### Women's Aid Society

A group of society women have organized an association named "Ejército de Regeneración de la Mujer." One of its first activities has been the establishment of an asylum for fallen women similar to American reformatories. In addition, the members make attempts to persuade the prostitutes, especially when they are in the hospital for venereal patients, of the disadvantages of their mode of living. A similar society has been organized in the city of Aguas Calientes.

### Odontologic Congress

The First Mexican Odontological Congress, organized by the Association of Dental Surgeons, will be held in Mexico City, December 25-31. At the same time there will be held an exhibit of dental articles, and prominent foreign dentists will be invited to give practical courses. The secretary of the executive committee is Sr. Ernesto Acuña, Av. Isabel la Católica, 32.

### Practical Course in Bacteriology

The department of public health is organizing a one year course in practical bacteriology for young women. In this way it will familiarize itself with routine laboratory measures for the diagnosis of communicable diseases and also will become acquainted with the manufacture of bacterial vaccines. This course fills a true need, as nowhere outside the school of medicine is medical microbiology taught, and this teaching is limited to physicians who are not very likely to serve as assistants in the laboratories already established and to be established by the health department. At first there will be room for only eleven students; but if the course is a success, the school will either be enlarged or another one will be organized. The professor in charge is the laboratory worker Dr. Tomás G. Perrin.

## BERLIN

*(From Our Regular Correspondent)*

July 21, 1921.

### The New Prussian Public Health Council

The ministry of state has established for Prussia a public health council on the same lines as the national public health council of Germany. The purpose of the new council is to serve as an advisory board of the ministry of state, and more particularly of the subdepartment of public welfare, in all questions pertaining to public health and social and hygienic welfare, and in all medical, dental and pharmaceutic matters. This council will also serve as an arbitration committee for the settlement of certain controversies of a medical nature. The various duties of the council will devolve on the body as a whole or on certain committees. If need arises, special experts may be called in to assist in arriving at decisions. The committees of the council may in turn appoint subcommittees to deal with special questions. The members of the council will receive compensation in the form of fees computed by the number of days of service, including traveling expenses, if any.

### Association of Japanese Medical Men

Japanese medical men in Berlin, to the number of forty, have formed an association, one of the purposes of which is to reestablish relations between German and Japanese medical men, which were broken off by the war. With this purpose in view, the association organized last month a special session, to which the directors of all the institutes in which Japanese physicians are engaged at the present time were invited. The invitation included the dean of the medical faculty (Geheimrat Rubner), the presidents of the medical societies and certain representatives of the medical press. Following the special session, a banquet was held, at which several Japanese gave expression to their gratitude for the part that the Germans had played in the advancement of Japanese medicine. The announcement that the owner of two widely read Japanese newspapers had contributed 300,000 marks for the relief of German children made a very favorable impression.

### Results of the Census of Persons Affected with Venereal Disease

During the period from Nov. 15 to Dec. 14, 1919, a census of persons suffering from venereal disease in Germany was taken. A preliminary official report of the result has now been published. It was ascertained that, during the period mentioned, 136,000 civilians and army men were under treatment for a venereal disease or its sequels. In other words, there were twenty-two venereal patients to 10,000 of population. In reporting the results of the census the names of patients were omitted. In many large cities the average rate of 0.22 per cent. was exceeded: Berlin, 0.76; Hamburg, 0.67, and Lübeck, 0.49 per cent. However, since in the large cities there are proportionally more unmarried men from 15 to 30 years of age (the dangerous period) than elsewhere, it is not justifiable to draw from these figures the definite conclusion that there is a greater spread of the diseases in the cities. The figures for the several states of Germany are not essentially different. The percentage for Saxony is 0.29; Prussia, 0.22 (thus identical with the average for the whole country); Bavaria and Thuringia, 0.19; Baden, 0.18, and Wurttemberg, 0.13. A comparison of the statistics recently obtained with those based on the census of 1913 does not show that venereal

diseases in Germany have materially increased. The incidence is most frequent in men and women in the 20-25 age group. The second most frequent incidence occurs, in both sexes, in the 25-30 age group, but after this a differentiation is noticeable, since the third most frequent incidence in men is during the period from 30 to 40; in women, from 15 to 20. Of the men, the unmarried group is most affected; then come the divorced, next the married group, while widowers come last. With the women, the relationship is different: the divorced are most affected; then come the unmarried, next the married, and widows come last.

### Death of Oswald Schmiedeberg

Professor Schmiedeberg, formerly ordinarius for experimental pharmacology in Strasbourg, died in Baden-Baden, July 12, at the age of 82. Schmiedeberg, a pupil of Rudolf Buchheim in Dorpat, was himself a native of the Baltic Provinces. After serving for a short time as assistant, he became Buchheim's successor in Dorpat. From there he was called, in 1872, to the newly established German university in Strasbourg. There he carried out his important work in the field of experimental pharmacology and became the instructor of numerous physicians and pharmacologists. His "Grundriss der Pharmakologie in bezug auf Arzneimittellehre und Toxikologie" has been widely used. By reason of his excellent contributions to science, Schmiedeberg was given a doctor's title *honoris causa* by the universities of Edinburgh and Bologna. He was a member of the Academy of Medicine of Paris, the Academy of Sciences of Rome, and honorary member of the Academy of Medicine of Brussels.

## HELSINGFORS, FINLAND

*(From Our Special Correspondent)*

July 18, 1921.

### Meeting of Scandinavian Physicians

Scandinavian physicians meet every two years in session, alternating in Stockholm, Copenhagen, Christiania and Helsingfors. This year the meeting was in Helsingfors. Unlike the session of the American Medical Association, at which the representatives of the various branches meet at the same time, four different sessions were held. First the tuberculosis men had their session; next the tenth northern congress of internal medicine was held from June 30 to July 2; then the orthopedists, and at last the surgeons, gynecologists and obstetricians met. Thus the program was extended more than two weeks.

### The Session for Internal Medicine

In spite of the strained political relations existing between Sweden and Finland over Aland Island, a great number of Swedish physicians attended, including Jacobeus from Stockholm, Petrén from Lund and the roentgenologist Forssell from Stockholm. P. Holst was the leading man from Norway, and Knud Faber from Denmark. The Finnish hosts were qualitatively and numerically well represented. Of the leaders, Tallqvist and Schauman are internationally known for their work on pernicious anemia. The scientific program of a session consists, except for freely chosen lectures, of a theme for discussion. The latter is chosen at the previous session. For the opening discussion, there is generally selected one man for each country. The theme at Helsingfors was "The Prevalence and Treatment of Visceral Syphilis." Opening papers on this subject were read by J. Hagelstam, professor of diseases of the nervous system in Helsingfors, O. Hanssen of Bergen, and H. C. Jacobeus, professor of internal medicine at Stockholm. The lively discussion centered on the value of the arsenical preparations. In Europe and especially in Scandinavia, these have never received such an extensive use as in the United States. In the light of the American vigorous treatment, especially of early syphilis, the European way of treatment would be called inadequate so far as arsphenamin is concerned. Whatever the fault may be, the arsenical preparations have given disappointing results in the hands of Scandinavian physicians. Extensive statistics from some of the Scandinavian clinics show further that symptoms from the central nervous system in recent years appear at a much earlier date than they did before the use of arsenical preparations. This is a view similar to that expressed by Nonne of Hamburg in a recent lecture in Helsingfors. His opinion was that the use of arsenical preparations seems to hurry the onset of central nervous complications. Whatever may be the cause of this, a change of the virus or a change in the treatment remains to be discovered. All speakers seemed to agree on one point, namely, that the arsphenamin preparations are still of uncertain value.

Jacobeus read a paper on the burning of adhesions as a method of changing a partial pneumothorax into a complete one. Numerous roentgenograms demonstrated convincingly the brilliant effects of this method. Jacobeus has been invited to lecture on this subject at the coming congress of Clinical Surgeons of North America in Philadelphia. A. Josefsson of Stockholm gave an interesting talk on the diagnostic value of gas injections into the various cavities. He described the removal by tapping of from 60 to 70 c.c. of fluid from the lumbar canal and thereupon the injection of some air into it. In case of a tumor in or around the cord, the air will not extend above it. Operative findings confirmed the correctness of the diagnosis.

Forssell showed his ability to get excellent roentgenograms when he demonstrated on the screen the foldings of the mucous membrane of the digestive tract. By careful watching he had seen folds appear also in the first part of the duodenum, thus for the first time, I believe, demonstrating their presence. This was contrary to all earlier authors, but the plates left one in no doubt as to their presence, in these instances at any rate.

Karl Petrén, in talking about the treatment of grave diabetes, said that he did not get as good results with the Allen method as with a moderate reduction of the intake.

Schauman discussed the rarity of chlorosis in recent years. His statistical material was not only from Finland but also from Scandinavian clinics.

Osten Holsti of Helsingfors confirmed Pemberton's results in showing alimentary hyperglycemia in all kinds of chronic arthritis. He has extended his researches to acute rheumatic polyarthritis, in which in all of his cases he found a marked alimentary hyperglycemia.

Hisinger-Jägerskiöld of Helsingfors related his interesting studies over the capillaries in pernicious anemia according to the Müller-Weiss method.

Many other papers of interest were read. It can be said that this session bore witness to the high standing of internal medicine in the Scandinavian countries.

## Marriages

HERBERT C. NERLETT, major, M. C., U. S. Army, Baltimore, to Miss Mary Belle Small at Washington, D. C., June 11.

STANLEY HEWITT HAYNES, Minneapolis, to Miss Ruth McKay of Cleveland, at Delaware, Ohio, July 7.

GEORGE FRANCIS PATTERSON, Cincinnati, to Miss Mary Schmueckle at Delphos, Ohio, August 10.

JOHN BAIRD, Richmond, Va., to Miss Emily Elizabeth Richmond of Gate City, Va., in July.

J. CALVIN DAVIS, Jr., to Miss Elizabeth Kathryn Norton, both of Omaha, April 9.

LEWIS I. MILLER, Denver, to Miss Ethel Bluestone, in New York City, July 1.

# Deaths

**Matthew H. Cryer** ● Philadelphia; Medical Department, University of Pennsylvania, Philadelphia, 1877; emeritus professor of oral surgery at the University of Pennsylvania, since 1898; died, August 12, after several months' illness, aged 81. Dr. Cryer was born in Manchester, England, in 1840, and came to the United States in 1851. He was a veteran of the Civil War, with the rank of major. He was for twenty years lecturer on mechanical dentistry at the Phialdelphia Dental College, and since 1900, oral surgeon on the staff of the Philadelphia (Blockley) Hospital. He was a member of the Academy of Stomatology; American Dental Society; American Society for the Advancement of Sciences; Pathological Society of Philadelphia, and in 1902 was president of the Pennsylvania State Dental Society. He was the author of several books on dental anatomy.

**Floyd W. McRae** ● Atlanta, Ga.; Atlanta Medical College, 1885; postgraduate courses at the New York Post-Graduate Medical School and Hospital, and the New York Polyclinic; was found dead in his room, Saturday, August 13, from a revolver wound, aged 59. Dr. McRae was born in December, 1861; after his graduation he specialized in surgery; from 1885-1893 he was demonstrator of anatomy at Atlanta Medical College, prior to which he was professor of physiology at Atlanta Dental College and the Southern Medical College. He was a member of the American Surgical Association, the Southern Surgical Association, the American College of Surgeons and the American Urological Association.

**Elmira Y. Howard,** Palmyra, Mo.; New York Medical College and Hospital for Women (Homeopathic), New York City, 1869; clinics in Vienna General Hospital, Austria, 1873-1874; practiced in Cincinnati for twenty-five years; died, August 7, at the home of her son, Covington, Ky., from chronic nephritis and pulmonary congestion, aged 80.

**Bartholomew Bantley,** National Soldier's Home, Danville, Ill.; Rush Medical College, Chicago, 1886; assistant surgeon, National Home, Milwaukee, 1900-1921; Civil War veteran, and later served in the regular army; died, August 10, following several surgical operations, in the general hospital of the home, aged 73.

**Robert McLean G. Taft,** New York City; New York University Medical College, 1894; served as surgeon in both the British and American navies, during the late war; member of the Medical Society of the State of New York; died suddenly, August 8, from heart disease in a street near his home, aged 47.

**Hiram M. Miller** ● Chester, Pa.; University of Pennsylvania, Philadelphia, 1891; postgraduate courses in Berlin, Vienna and Paris; spent 1895-1902 in scientific explorations; on the staff of the Chester Hospital and Glen Mills Reform School; died in Bellefonte, Pa., August 8, aged 54.

**Charles A. White** ● Danville, Ind.; Rush Medical College, Chicago, 1871; Civil War veteran; for twenty-five years local surgeon of the Big Four Railroad; practitioner for over half a century; died, August 10, at the Deaconess Hospital, Indianapolis, from chronic nephritis, aged 76.

**George Pearson Bell,** Wynyard, Sask., M.R., C.S. (Eng.), 1872; M.B.C.M., 1876; M.D., University of Aberdeen (N.B.), 1879; assistant surgeon, Northwest Mounted Police, 1894-1905, and surgeon 1905-1915, Saskatchewan, Canada; died, June 27, from osteosarcoma, aged 74.

**Robert Eugene Bering,** Long Beach, Calif.; Tulane University of Louisiana, New Orleans, 1895; superintendent of the Bering Sanatorium, San Francisco, for fifteen years; member of the California Medical Association; died, August 8, from paralysis, aged 50.

**Henry H. Sutton,** Madoc, Ont.; University of Toronto, 1866; served as army surgeon in the U. S. Civil War, 1861-1865; died in the General Hospital, in June, from burns, caused by the accidental igniting of the bedclothes, aged 84.

**Arthur Patrick Coll,** New York; College of Physicians and Surgeons, New York City, 1890; member of the New York Academy of Medicine; specialized in laryngology and rhinology; died suddenly of apoplexy, August 10, aged 57.

**John Sadler,** Columbus, Ohio; Cleveland Medical College (Western Reserve University), Cleveland, 1869; practitioner in Columbus for over half a century; veteran of the Civil War; died, August 6, from arteriosclerosis, aged 77.

**Jefferson G. Hutson,** Carriers Mills, Ill.; American Medical College, St. Louis, 1896; died, August 9, at the Crane Hospital, West Frankfort, following a nervous collapse, aged 60.

**Francis Henry Dodge,** Lake Mills, Wis. (license, Wisconsin, 1899); also a druggist; practitioner for over fifty years; died, July 27, from the results of an accident, aged 93.

**Joseph Clark Winans** ● Belleville, N. J.; University and Bellevue Hospital Medical College, New York City, 1905; Captain, M. C., U. S. Army, during the World War; died, August 9, from septicemia and anemia, aged 43.

**Stanley H. Haynes,** Minneapolis; Rush Medical College, Chicago, 1920; until July 21, on the staff of the Lakeside Hospital, Cleveland; died, August 8, following an operation at the Northwestern Hospital, aged 28.

**John Bryant,** Independence, Mo.; St. Louis Medical College, 1865; Jefferson Medical College, Philadelphia, 1866; died, July 16, at the home of his daughter, Berkeley, Calif., from arteriosclerosis, aged 78.

**Patrick J. Hirst** ● Salisbury Center, N. Y.; Albany Medical College, Albany, 1910; superintendent of the Herkimer County Tuberculosis Sanatorium; died suddenly, August 10, from heart disease, aged 37.

**William Remington Udney Wolcott,** Moscow, Idaho; University of Michigan Medical School, Ann Arbor, 1910; was killed, June 15, when he fell from a third story window, in San Diego, Calif., aged 35.

**James Hetherington Mackintosh,** Westwood, N. J.; Bellevue Hospital Medical College, New York City, 1872; also a druggist; practitioner for nearly half a century; died, August 5, aged 84.

**Cleon Andrew Giles,** Canton, Ohio; Ohio State University, College of Homeopathic Medicine, Columbus, 1915; died at the home of his parents, August 2, from acute rheumatism, aged 34.

**John Burton Martyn,** Alviston, Ont.; Trinity Medical College, Toronto, 1891; member of the legislature, 1914-1919, for East Lampton; died, June 3, from pneumonia, aged 53.

**John Wesley Carmichael** ● Knoxville, Tenn.; Vanderbilt University, Nashville, 1887; specialized in pediatrics; died suddenly, August 7, from heart disease, aged 72.

**Jacob Edward Berry,** Clarington, Ohio; Starling Medical College, Columbus, 1898; died, August 7, in the Ohio Valley General Hospital, Wheeling, W. Va., aged 47.

**J. A. Cozby,** Azle, Texas; Kentucky School of Medicine, Louisville, 1884; died, August 1, at a hospital in Fort Worth, from cerebral hemorrhage, aged 60.

**Charles R. Mahady** ● Rome, N. Y.; Baltimore Medical College, 1897; health officer since 1908; died, August 8, from cerebral hemorrhage, aged 49.

**Robert S. Lynn,** Tulsa, Okla.; Gross Medical College, Denver, 1898; member of the Oklahoma State Medical Association; died, May 27, aged 57.

**William Henry Cook,** Livonia, Ind.; Kentucky School of Medicine, Louisville, 1895; died, July 29, from liver and stomach trouble, aged 64.

**Andrew J. Beardsley,** Huntington, W. Va.; Bellevue Hospital Medical College, New York City, 1870; died, June 25, from dysentery, aged 78.

**Nathaniel W. Comegys,** Millington, Md.; University of Maryland, Baltimore, 1866; died, July 30, from cerebral hemorrhage, aged 79.

**Robert L. May,** Jacksonville, Fla.; University of Maryland, Baltimore, 1890; died suddenly, August 2, from heart disease, aged 56.

**Eldridge Sharp Edwards,** Milton, Iowa; attended Keokuk (Iowa) Medical College (license, Iowa, 1888); died, July 29, aged 82.

**Pierre O. Wagener,** Harbor Beach, Mich.; University of Bonn, Germany, 1869; died, July 30, from arteriosclerosis, aged 70.

**V. C. Huff,** Wytheville, Va.; Medical College of Virginia, Richmond, 1865; confederate veteran; died, July 21, aged 87.

**Otto E. Westedt,** Loganville, Wis.; Medical Department, Marquette University, Milwaukee, 1908; died, July 9, aged 42.

**Nathan Hall Williams,** Pasadena, Calif.; University of Michigan, Ann Arbor, 1878; died, August 4, aged 74.

**Eindred Viko** ● Salt Lake City; Minnesota Hospital College, Minneapolis, 1887; died, July 11, aged 58.

**William Clifford Braden,** Orchard, Colo.; Denver College of Medicine, 1892; died, July 23, aged 55.

● Indicates "Fellow" of the American Medical Association.

# The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE JOURNAL'S BUREAU OF INVESTIGATION, OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER GENERAL MATERIAL OF AN INFORMATIVE NATURE

## MORE MISBRANDED NOSTRUMS

### Abstracts of Recent Notices of Judgment Issued by the Bureau of Chemistry of the United States Department of Agriculture

**Tonoline Tablets.**—The American Drug Sales Co., Boston, Mass., are alleged to have shipped in October, 1918, a quantity of "Tonoline Tablets" which were misbranded. The Bureau of Chemistry reported that analysis showed the pills to consist essentially of nux vomica alkaloids and ferrous iron. Some of the claims made for the product were:

". . . valuable in the treatment of the various Debilitating Diseases of men and in the most extreme cases of Nervous Prostration in women . . ."

"For . . . Nervousness, Rundown, Wornout, Emaciated, Lost Ambition, and to Correct Poor Assimilation."

". . . to Make Thin . . . Men and Women Plump . . . the missing link between food and flesh."

". . . most marvelous body builder which medical science has, so far, produced."

". . . nothing . . . has even been discovered which can in any way approach it."

Naturally these preposterous claims, and others similar to them, were declared false and fraudulent and in October, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 9067; issued May 25, 1921.*]

**Antifebrom, Regilaterro No. 1, Lekarstwo Na Szkorbut, Lekarstwo przeciw Pijanstwu, Krople Bobrowe, Krople Maciczne, Gardlolek, Krople Nazemcowe, and Krople Laurowe.**—In January, 1917, the Dr. John Chmiell Co., Boston, Mass., were alleged to have shipped quantities of "Antifebrom," "Regilaterro No. 1," "Lekarstwo Na Szkorbut," "Lekarstwo przeciw Pijanstwu," "Krople Bobrowe," "Krople Maciczne," "Gardlolek," "Krople Nazemcowe" and "Krople Laurowe," which were misbranded.

The federal chemists reported that analysis showed "Antifebrom" to be a water-alcohol solution containing iron, quinin and strychnin, with sulphuric and citric acids, probably as quinin sulphate and iron and strychnin citrate. The product was falsely and fraudulently represented as effective to improve digestion and to remove all kinds of stomach ailments, rheumatism and fever, and as a sure cure for colds, influenza and malaria.

"Regilaterro No. 1" was reported by the federal chemists to be a water-alcohol solution of aloes. It was falsely and fraudulently represented as effective to prevent smallpox and as a remedy for rheumatism, kidney troubles, dyspepsia, all stomach disorders, colds, coughs, and as a special remedy for headache.

"Lekarstwo Na Szkorbut" was reported by the federal chemists to be a glucose sirup containing a small amount of alum and copper sulphate (blue vitriol) in solution. It was falsely and fraudulently represented as an effective remedy and cure for scurvy.

"Lekarstwo przeciw Pijanstwu" was reported by the federal chemists to be powdered ipecac with sodium bromid and a small amount of ammonium salts and to contain a high percentage of mineral impurities. This preparation was falsely and fraudulently represented as an effective remedy and cure for the drink habit.

"Krople Bobrowe," according to the federal chemists, was found to be a water-alcohol solution containing strychnin, iron, lime and magnesium, united with sulphuric, citric and phosphoric acids. It was falsely and fraudulently represented as an effective remedy for all sorts of feminine ailments, lack of strength and pleasure of life, weariness and disability to perform work, and for women desiring to have children.

"Krople Maciczne" was, according to the federal chemists, a mixture of alcohol, ether and water containing emodin-bearing (laxative) drugs. This was falsely and fraudulently represented as effective as a womb remedy and a cure for rheumatism.

"Gardlolek" was reported by the federal chemists to be a solution containing boric acid, menthol and thymol. This was falsely and fraudulently claimed to be an effective remedy for diphtheria.

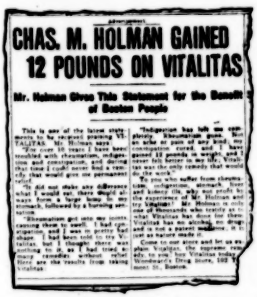
"Krople Nazemcowe" was reported by the federal chemists to be a water-alcohol solution containing an emodin-bearing drug, probably senna, also gentian and capsicum (red pepper), but no alkaloids. It was falsely and fraudulently represented as an effective remedy for pains in the stomach caused by diarrhea, and as a remedy for faintness.

"Krople Laurowe," according to the federal chemists, was found to be an extract of bitter almond. It was falsely and fraudulently labeled as an effective remedy for heart troubles.

In addition to the false and fraudulent claims made for these preparations, two of the products ("Krople Maciczne" and "Krople Laurowe") were misbranded in that the amount and proportion of alcohol in them was incorrectly stated.

In September, 1919, the Dr. John Chmiell Co. entered a plea of *nolo contendere* and was fined $25.—[*Notice of Judgment No. 9042; issued May 25, 1921.*]

**Vitalitas.**—In July and August, 1919, the Vital Remedies Co., Houston, Texas, are alleged to have shipped a quantity of Vitalitas which was misbranded. Analysis of the sample of the article by the Bureau of Chemistry showed that the stuff consisted essentially of a watery solution of sulphate of iron and aluminum, with traces of other mineral salts. The trade packages bore such claims as:


CHAS. M. HOLMAN GAINED 12 POUNDS ON VITALITAS

Mr. Holman Gives This Statement for the Benefit of Boston People

This is one of the latest statements to be received praising VITALITAS. Mr. Holman says:

"For years I suffered with indigestion, constipation and rheumatism, and during this time I could never find a remedy that would give me permanent relief.

"It did not make any difference what I would eat, there always seemed to be gases from a large lump in my stomach, followed by a burning sensation.

"Sometimes I would get into my room, evening about 10 o'clock, so tired, so dejected, and I was in pretty bad shape. I had been told to try Vitalitas, but I thought there was nothing to it, as I had tried so many remedies without relief. Here are the results from taking Vitalitas:

"Judgment has left me very thankful. Rheumatism, as you see, is also on pass list. I feel well, have gained 12 pounds in weight, and I never felt better in my life. Vitalitas was the only remedy that would do the work.

"If you who suffer from chronic constipation, nervous indigestion and rheumatism, could only see the wonderful change in the appearance of Mr. Holman as well as hundreds who testify as to what Vitalitas has done for them, you would be satisfied. It is not a patent medicine, it is sold on a square deal.

Come to our store and let us explain Vitalitas. Our experts will be glad to tell you how Vitalitas today. Vitalitas Drug Store, 169 Tremont St., Boston.

"Its functions are to enrich the blood, strengthen the tone of the system, and thus aid in the restoration of healthy functions."

"A Family Remedy useful in the treatment of Rheumatism, Chronic Indigestion, Impoverished Blood, Atonic Dyspepsia, Chronic Diarrhea, Dropsy, Malarial Anemia, General Debility following recovery from acute diseases, Leucorrhea, and Excessive Menstruation."

These claims were declared false and fraudulent "in that the article contained no ingredient or combination of ingredients capable of producing the effects claimed." In April and October, 1920, the Vital Remedies Co., Inc., filed bonds that were satisfactory to the court and the court ordered that the product be delivered to the concern on payment of the the cost of the proceedings.—[*Notice of Judgment No. 9050; issued May 25, 1921.*]

**Red Cross Tansy Pills.**—The Norman Lichty Mfg. Co., Des Moines, Iowa, were alleged to have shipped in June, 1920, a quantity of this product which was misbranded. The federal chemists reported that analysis showed the contents of the pills to consist essentially of aloes and iron (ferrous) sulphate. The package bore such claims as:

"Relieves cases of obstructions of long standing and the Regulation of Female Complaints."

"Sure Relief in cases of obstructions of long standing and the Regulation of all Female Complaints . . . safe and sure as a monthly regulator."

"For Suppressed Menstruation, for Painful Menstruation, and a preventive for Irregular Menstruation."

These and similar claims were declared false and fraudulent and in November, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 8988; issued May 24, 1921.*]

**Claes Tilly Genuine Medicamentum.**—In November, 1918, and January, 1919, Claes Tilly, Inc., New York City, are alleged to have shipped a quantity of "Claes Tilly Genuine Medicamentum" which was misbranded. The Bureau of Chemistry reported that analysis showed the product to be a

sulphurated vegetable oil, probably linseed, mixed with turpentine and possibly a small amount of oil of amber. The preparation was falsely and fraudulently represented as an effective treatment, remedy and cure for bladder, kidney, and liver disorders, brittle nails, measles, smallpox, jaundice, pneumonia, and worms in children. In January, 1921, a plea of guilty was entered on behalf of the defendant company, and Claes Tilly, Inc., was fined $200.—[*Notice of Judgment No. 9007; issued May 25, 1921.*]

**Howe's Compound Damiana Tablets.**—The Howe Medicine Co., Philadelphia, Pa., are alleged to have shipped in December, 1919, a quantity of this product which was misbranded. The federal chemists reported that analysis showed the pills to consist essentially of phosphorus and extractives of damiana and nux vomica. The preparation bore such claims as:

"For Lost Vitality and Wasting Weakness . . . continued use of this remedy will produce the most satisfactory results."
"A True Tonic For the Entire System."

These claims were declared false and fraudulent for the reason that the product contained no ingredient or combination of ingredients capable of producing the therapeutic effect claimed. In October, 1920, judgment of condemnation and forfeiture was entered and the court ordered that the product be destroyed.—[*Notice of Judgment No. 9058, issued May 25, 1921.*]

## Correspondence

### "CHIROPRACTIC IN OHIO"

*To the Editor:*—A communication in the correspondence column (THE JOURNAL, August 13) states, on the authority of Dr. M. M. Wickware, Detroit, that a certain physician of Ohio reports this state as being one of the few states that allows chiropractors to sign death certificates. This is a false report, as such practice has never been allowed by law in this state, nor have such signatures ever been accepted by the Ohio Bureau of Vital Statistics.

Only several days ago, I requested of the present attorney general of Ohio and received from him a ruling setting forth emphatically and again emphasizing the same ruling as taken by his predecessors; namely, that no one other than regularly licensed medical practitioners has a legal right to sign death certificates. It has always been my opinion that this ruling is in accordance with the law and is entirely just and fair, and it is consequently the policy of this bureau to reject every certificate of death on which it is noticed or evident that the signatory physician is a doctor of chiropractics or similar practitioners.

U. G. MURRELL, M.D., Columbus, Ohio.
Registrar, Department of State,
Bureau of Vital Statistics.

### THE MATERNITY BILL

*To the Editor:*—I am enclosing a copy of Senate Bill 1039, commonly called the Maternity Bill, which passed the Senate, July 25, 1921, and has since been referred to the Committee on Interstate and Foreign Commerce, House of Representatives, for its consideration.

While this bill contains humanitarian and desirable provisions which would particularly confer advantages on citizens of the sparsely inhabited states of the Union, it also contains very objectionable provisions. Aside from its invasion of states' rights and the creation of powers within the federal government to do many of the things for the citizens of the states, which things the citizens of the respective states should do for themselves, the measure, if it becomes a law, will probably seriously interfere with the rights, privileges and emoluments of the medical profession, as most measures do which go too far in the direction of state medicine.

But perhaps the most un-American and unfair provision of the bill is that, while it provides for the exercise of the option on the part of the several states to decline to receive any benefits from the measure, it saddles upon all states alike the burdensome taxation necessary to create appropriations carried in the bill. To illustrate: If the state of Illinois, having a population much larger than that of many other states of the Union, were to fail to cooperate in or fail to accept any benefits accruing from the measure (and it is doubtful whether the measure would confer any benefits upon the state of Illinois, even were that state to cooperate), the measure would mean to the state of Illinois an increase in federal taxation much out of proportion to that borne by other states, and certainly out of proportion to any benefits that might accrue to the state of Illinois.

J. J. KINDRED, M.D.,
House of Representatives, U. S.

### "A CASE OF CHRONIC ACETANILIDISM"

*To the Editor:*—I was much interested in the report by Dr. John Shuman in THE JOURNAL, August 13, of a case of chronic acetanilidism. This young woman is now a patient in the University Hospital at Minneapolis. I was asked to see her a few days ago.

GILBERT J. THOMAS, M.D., Minneapolis.

[COMMENT.—Since the publication of the article by Dr. Shuman, evidence has developed that this patient has been ill at various times in several different hospitals in which she has been engaged as nurse, the list including at least two hospitals in Chicago, the hospital in Sioux City and in Minneapolis.—ED.]

## Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

### BENZYL BENZOATE AND CINCHOPHEN

*To the Editor:*—I would greatly appreciate anything that you could tell me as to the toxicity of (1) benzyl benzoate and (2) cinchophen, the maximum single dose, maximum in twenty-four hours and signs of poisoning by each. I do not seem to be able to get results desired by small doses, and the literature at my command gives me no idea how far I can safely venture. W. A. BELSEY, M.D., Poplar Grove, Ill.

ANSWER.—1. The pharmacology of benzyl benzoate is largely the work of D. I. Macht, and is not completed. From a therapeutic point of view the drug is decidedly in the experimental stage. Macht states that the toxicity of benzyl benzoate is comparatively low, especially in relation to papaverin (THE JOURNAL, Aug. 23, 1919, p. 600). Heller and Steinfield, using benzene as a control, found that benzyl benzoate was without toxic effect on the leukocytes of rabbits (*New York M. J.* **112**:160 [July 31] 1920). More recent work by Emge and Jensen contradicts that of Heller and Steinfeld, as the former show that when benzyl benzoate, even in small dose, is given to rabbits over longer periods than described by Heller and Steinfield, a leukocytosis occurs. It was noted by these authors that while treating spasmodic dysmenorrhea with benzyl benzoate, in two patients the recrudescence of an old appendicitis was not accompanied by the usual increase in white cells (*J. Pharmacol. & Exper. Therap.* **17**:415 [June] 1921). As to dosage, Litzenberg reported that, in the treatment of dysmenorrhea, he did not obtain as complete relief as desired with the dosage recommended by Macht—from 10 to 30 drops of a 20 per cent. solution in alcohol—so that he increased the dose to 1 teaspoonful and even to 2 drams every two hours (THE JOURNAL, Aug. 23, 1919, p. 601). We know of no data on the symptoms of poisoning from extratherapeutic doses of benzyl benzoate in case of man. In animals, so Macht states, injections of large doses of benzyl esters exhibit symptoms referable to the central nervous system in the form of spastic

convulsions. Thus, in mice, guinea-pigs, rabbits and cats, death occurs generally with convulsions following paralysis of the respiration (*J. Pharmacol. & Exper. Therap.* **11**:419 [July] 1918). Our correspondent's inability to obtain results in the benzyl therapy is in line with a recent editorial: "Certainly this new work suggests that allowances be made for impressions, reflex influences, the psychic state and natural recovery before drawing definite conclusions as to the beneficial effects of benzyl benzoate especially in such capricious conditions as hiccup, whooping cough, asthma and dysmenorrhea for which it has been advocated" (THE JOURNAL, April 9, 1921, p. 1252). The "new work" referred to was that of Mason and Pieck, who got negative results on untreated and previously excised organs of dogs after benzyl benzoate intravenously. Subsequently, however, Nielsen and Higgins, using a different method, have obtained certain results which do not harmonize with those of Mason and Pieck (*J. Lab. & Clin. Med.* **6**:388 [April] 1921).

2. Cinchophen, introduced as atophan, resembles the salicylate compounds in action. According to the recent work of Hanzlik and others, "Large doses of cinchophen, . . . such as are necessary in the treatment of rheumatic fever, produce characteristic symptoms of salicylism [headache, dizziness, fulness of the head, buzzing in the ears, nausea, sometimes vomiting and pain in the epigastrium], which, however, are less pronounced than those caused by corresponding doses of salicylate." The dosage recommended in New and Non-official Remedies for gout is from 0.5 gm. of cinchophen four times a day to 1 gm. three times a day. In rheumatic fever, Hanzlik used 1 gm. of the drug every hour until definite symptoms of drug action were manifested. (Hanzlik, P. J.; Scott, R. W.; Weidenthal, C. M., and Fetterman, Joseph: Cinchophen, Neocinchophen and Novaspirin in Rheumatic Fever, THE JOURNAL, June 18, 1921, p. 1728.)

### EFFECT OF INTERMARRIAGE OF KIN ON OFFSPRING

*To the Editor:*—Please inform me where I may procure literature on the subject of the effect of intermarriage of kin on their offspring. If there has been anything authoritative written on this subject, I shall be glad to know where I can purchase it.

S. CLARENCE DEAN, M.D., Anderson, S. C.

ANSWER.—Following is a list of literature on the effect of intermarriage of kin on their offspring:


Kemp, M. P.: Consanguinity Among Patients at Newberry State Hospital, *Am. J. Insanity* **73**:487 (Jan.) 1917.

Arner, G. B. L.: Consanguineous Marriage in the American Population, Columbia University, Studies in History, Economics, Public Law, New York Columbia University **31**, No. 3, 1909.

Barr, M. W.: Marriage: Results and Effects of Heredity, Consanguinity and Environment, *J. Psycho-Asthenics* **16**: 43-49, 1911-1912.

Elderton, E. M.: On the Marriage of First Cousins, published by Dulan & Co., 37 Soho Square, London, W., 1912; price 1 shilling.

Consanguineous Marriage, Berlin Letter, THE JOURNAL, Jan. 30, 1915, p. 452.

Yearsley, M.: Question of "Concubitancy" in Cousin Marriages, *Lancet*, Jan. 17, 1914.

Kangiesser, F.: Consanguineous Marriages, *München. med. Wchnschr.*, April 1, 1913; abstr. THE JOURNAL, May 17, 1913, p. 1587.

Crane, R. N.: Marriage Laws and Statutory Experiments in Eugenics in the United States, *Eugenics Review*, April, 1910.

Davenport, C. B.: State Laws Limiting Marriage Selection in the Light of Eugenics, Cold Spring Harbor, 1913, p. 66.

Rogers, A. C.: Recent Attempts at Restrictive Marriage Legislation, Nat. Conf. of Char. & Correction, 1901, p. 200.


### DISCOLORATION OF FINGER NAILS

*To the Editor:*—I would thank you greatly for some advice relative to a peculiar condition of a young woman's finger nails. The nails on both hands under the upper border and almost half way down the nails have turned black, the color resembling a silver nitrate stain. She denies using anything in manicuring the nails that would cause this. I find absolutely no constitutional condition that could cause this condition, which has persisted for almost two months.

R. C. F.

ANSWER.—Discolorations of this sort sometimes come to the observation of dermatologists. They are, in all probability, due to some external chemical coming in contact with the nails. There is no known disease of the nails that produces such discoloration. It is frequently very difficult to determine the agent.

### "REMOVAL OF SILVER STAINS"

*To the Editor:*—You will find a saturated solution of sodium or potassium iodid more satisfactory than the formula given in your answer to Dr. J. P. Brandon, Essex, Mo. (THE JOURNAL, July 30, p. 395). It does not take many drops, and acts in a few minutes.

OLIVER TYDINGS, M.D., Chicago.

## *Medical Education, Registration and Hospital Service*

### COMING EXAMINATIONS

ALASKA: Juneau, Sept. 6. Sec., Dr. Harry C. De Vighne, Juneau.
ARIZONA: Phoenix, Oct. 4-5. Sec., Dr. Ancil Martin, 207 Goodrich Bldg., Phoenix.
COLORADO: Denver, Oct. 4. Sec. Dr. David A. Strickler, 612 Empire Bldg., Denver.
DISTRICT OF COLUMBIA: Washington, Oct. 11. Sec., Dr. Edgar P. Copeland, 1315 Rhode Island Ave., Washington.
GEORGIA: Atlanta, Oct. 11-13. Sec., Dr. C. T. Nolan, Marietta.
HAWAII: Honolulu, Oct. 9. Sec., Dr. G. C. Milnor, 401 S. Beretania St., Honolulu.
IDAHO: Boise, Oct. 4. Director, Mr. Paul Davis, Boise.
ILLINOIS: 217 County Bldg., Chicago, Aug. 30-31. Director, Mr. W. H. H. Miller, Capitol Bdg., Springfield.
KANSAS: Topeka, Oct. 11. Sec., Dr. Albert S. Ross, Sabetha.
MASSACHUSETTS: Boston, Sept. 13-15. Sec., Dr. Walter P. Bowers, 144 State House, Boston.
MICHIGAN: Lansing, Oct. 11. Sec., Dr. Beverly D. Harison, 504 Washington Arcade, Detroit.
MINNESOTA: Minneapolis, Oct. 4-6. Sec., Dr. Thomas McDavitt, 539 Lowry Bldg., St. Paul.
MONTANA: Helena, Oct. 4. Sec., Dr. S. A. Cooney, Power Bldg., Helena.
NEW HAMPSHIRE: Concord, Sept. 9-10. Sec., Dr. Charles Duncan, Concord.
NEW MEXICO: Santa Fe, Oct. 10-11. Sec., Dr. R. E. McBride, Las Cruces.
NEW YORK: Albany, Buffalo, New York City and Syracuse, Sept. 26-29. Mr. Herbert J. Hamilton, Asst. Professional Examinations, Education Bldg., Albany.
OKLAHOMA: Oklahoma City, Oct. 11-12. Sec., Dr. J. M. Byrum, Shawnee.
PORTO RICO: San Juan, Oct. 4. Sec., Dr. M. Quevedo Baez, Box 804, San Juan.
RHODE ISLAND: Providence, Oct. 6-7. Sec., Dr. B. U. Richards, State House, Providence.
WEST VIRGINIA: Charleston, Oct. 11. Sec., Dr. W. T. Henshaw, Charleston.
WYOMING: Cheyenne, Oct. 3-5. Sec., Dr. J. D. Shingle, Cheyenne.

### REPORT OF ELEVENTH EXAMINATION OF THE NATIONAL BOARD OF MEDICAL EXAMINERS

The eleventh examination of the National Board of Medical Examiners was held in Boston, June 14-21, 1921. The written and laboratory examinations were held in the Harvard Medical School, and the clinical examinations were held in the Massachusetts General Hospital, the Peter Bent Brigham Hospital and the Boston City Hospital. The subjects of the examination and the relative value of each were: anatomy, 100; physiology, 75; chemistry, 75; pathology, 75; bacteriology, 50; materia medica, pharmacology, and therapeutics, 75; medicine, 200; surgery, 200; obstetrics and gynecology, 75; hygiene and sanitation, 50; medical jurisprudence, 25. A percentage of 75 was required to pass. Falling below 65 per cent. in two subjects, or below 50 in one subject, constituted a failure.

There were fifty-nine applicants who applied for examination. Fifty-three were found to have the essential preliminary and medical qualifications. Forty appeared for examination, of whom thirty-seven passed and three failed.

PASSED

| Name | College | Year of Graduation |
|---|---|---|
| Tracy J. Putman | Harvard Medical School | 1920 |
| Edward D. Churchill | Harvard Medical School | 1920 |
| Clarence J. Gamble | Harvard Medical School | 1920 |
| Isaac Starr, Jr. | University of Pennsylvania | 1920 |
| Joseph Trelear Wearn | Harvard Medical School | 1917 |
| Lawrence W. Smith | Harvard Medical School | 1920 |
| John Ross Marshall | Harvard Medical School | 1918 |
| George Lawrence Chaffin | Harvard Medical School | 1917 |
| Ellis Herndon Hudson | University of Pennsylvania | 1919 |
| Glen Evan Cheley | Harvard Medical School | 1920 |
| Francis Clark Grant | University of Pennsylvania | 1919 |
| Wm. Kenneth Livingston | Harvard Medical School | 1913 |
| Kempton P. A. Taylor | University of Pennsylvania | 1919 |
| Julia Morgan | University of Pennsylvania | 1920 |
| Monroe Anderson McIver | Harvard Medical School | 1917 |
| Wayne A. Yoakman | Harvard Medical School | 1920 |
| Wm. Jefferson Armstrong | University of Pennsylvania | 1920 |
| Ellis Moore Black | Harvard Medical School | 1920 |
| Sheo-Nan Cheer | Johns Hopkins Medical School | 1920 |
| Olaf J. Pederson | Northwestern University Med. School | 1915 |
| Curtis Everett Smith | Harvard Medical School | 1918 |
| William Eustis Brown | Harvard Medical School | 1920 |
| Raymond D. Stillman | Harvard Medical School | 1920 |
| Don Dee Lyon | Harvard Medical School | 1920 |
| Seymour Fiske | University of Pennsylvania | 1920 |

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| | | |
|---|---|---|
| Milton James Quinn | Jefferson Medical College | 1919 |
| Mabel Hatteraley Pearson | Woman's Medical College | 1920 |
| Hugh Grant Rowell | Harvard Medical School | 1920 |
| Eugene N. Van Dyke | Johns Hopkins Medical School | 1920 |
| William Bell Cook | University of Pennsylvania | 1919 |
| Albert Howell Brewster | Johns Hopkins Medical College | 1918 |
| Newton Clarence Browder | Harvard Medical School | 1920 |
| Harold Inman Gosline | Harvard Medical School | 1914 |
| Mary J. K. Tomkins | Woman's Medical College | 1920 |
| George McMillen Brandau | Vanderbilt University | 1919 |
| Ralph F. MacDonald | Northwestern University Med. School | 1920 |
| David D. Greene | Harvard Medical School | 1920 |

FAILED

| | |
|---|---|
| University of Pennsylvania | 1920 |
| Tufts Medical College | 1913 |
| Boston University | 1918 |

AVERAGES OBTAINED *

| Candidates by Number | Anatomy; Value, 100 | Chemistry; Value, 75 | Mat. Med., Pharm. and Therapeutics; Value, 75 | Obstetrics and Gynecology; Value, 75 | Hygiene; Value 50 | Medicine; Value, 300 | Surgery; Value, 300 | Pathology; Value, 75 | Physiology; Value, 75 | Bacteriology; Value, 50 | Medical Jurisprudence; Value, 25 | Final Average |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 75 | 95 | 80 | 67 | 73 | 86.5 | 82.7 | 87 | 77 | 75 | 90 | 815 |
| 2 | 85 | 96 | 85.5 | 80 | 79 | 78.2 | 78 | 84 | 92 | 73 | 91 | 815.3 |
| 3 | 90 | 85 | 70 | 72 | 90 | 95 | 81 | 68 | 87 | 79 | 81 | 817.3 |
| 4 | 57 | 92 | 82 | 55 | 52 | 77.2 | 76.7 | 61.8 | 71 | 38 | 84 | 702.6 |
| 5 | 89 | 98 | 90.5 | 87 | 92 | 87.7 | 85.7 | 81.7 | 86 | 93 | 84 | 882.5 |
| 6 | 80 | 92 | 90 | 82 | 85 | 89.5 | 92.2 | 94.2 | 78 | 81 | 96 | 859.4 |
| 7 | 56 | 98 | 70.5 | 65 | 84 | 85.5 | 67.2 | 52.8 | 53 | 46 | 92 | 639.1 |
| 8 | 94 | 88 | 91 | 93 | 70 | 89.2 | 91.5 | 85 | 77 | 87 | 93 | 868.6 |
| 9 | 72 | 88 | 78.5 | 80 | 65 | 75.2 | 84 | 66 | 70 | 51 | 91 | 758.7 |
| 10 | 76 | 88 | 81 | 79 | 69 | 85 | 81.7 | 80.4 | 66 | 73 | 91 | 799.8 |
| 11 | 81 | 95 | 92 | 86 | 76 | 90 | 92.5 | 77.4 | 91 | 86 | 87 | 874 |
| 12 | 87 | 98 | 92 | 80 | 74 | 75.7 | 83.5 | 75.4 | 84 | 70 | 94 | 823.1 |
| 13 | 69 | 95 | 82 | 70 | 84 | 83.7 | 89.5 | 71.4 | 65 | 71 | 90 | 803.6 |
| 14 | 84 | 95 | 90.5 | 75 | 77 | 77 | 91 | 80.5 | 78 | 83 | 94 | 839.8 |
| 15 | 79 | 95 | 81 | 65 | 65 | 76 | 80.7 | 77.4 | 81 | 81 | 69 | 782.1 |
| 16 | 64 | 92 | 71 | 85 | 66 | 81.5 | 84.5 | 84 | 76 | 79 | 86 | 796.2 |
| 17 | 85 | 98 | 83 | 80 | 79 | 85.7 | 85.7 | 89 | 86 | 75 | 92 | 851.5 |
| 18 | 78 | 98 | 75 | 80 | 73 | 75 | 88.2 | 70.5 | 67 | 70 | 94 | 791.6 |
| 19 | 87 | 98 | 78.5 | 80 | 90 | 91.2 | 89 | 75.3 | 66 | 74 | 92 | 811 |
| 20 | 74 | 95 | 83.5 | 87 | 76 | 87 | 86 | 71.8 | 78 | 76 | 92 | 830.4 |
| 21 | 73 | 95 | 83.5 | 80 | 86 | 83 | 88 | 77 | 87 | 75 | 86 | 834.3 |
| 22 | 70 | 92 | 87.5 | 65 | 65 | 70.2 | 82.5 | 65.7 | 73 | 68 | 88 | 753.8 |
| 23 | 75 | 95 | 90.5 | 90 | 90 | 88.2 | 90.7 | 81.8 | 83 | 88 | 89 | 859.6 |
| 24 | 86 | 95 | 92 | 80 | 79 | 79 | 90.2 | 78.4 | 90 | 76 | 92 | 857.4 |
| 25 | 77 | 88 | 85 | 85 | 67 | 72.2 | 78 | 75.6 | 78 | 57 | 70 | 766.5 |
| 26 | 89 | 90 | 83 | 85 | 75 | 75.5 | 77.5 | 75.3 | 85 | 79 | 76 | 800 |
| 27 | 78 | 95 | 91.5 | 90 | 75 | 81 | 82.5 | 78 | 85 | 83 | 92 | 837 |
| 28 | 83 | 95 | 90 | 85 | 70 | 85.2 | 88.7 | 77.8 | 88 | 75 | 93 | 854.1 |
| 29 | 67 | 95 | 85 | 82 | 65 | 78 | 83.7 | 76.9 | 75 | 75 | 83 | 792.4 |
| 30 | 86 | 95 | 83.5 | 75 | 70 | 81 | 79.5 | 84.1 | 77 | 69 | 88 | 804.9 |
| 31 | 77 | 95 | 85.5 | 85 | 72 | 83.7 | 85.5 | 81.4 | 82 | 82 | 90 | 836.6 |
| 32 | 88 | 88 | 81.5 | 55 | 40 | 69.2 | 85.7 | 75.7 | 32 | 34 | 67 | 700.8 |
| 33 | 81 | 90 | 82.5 | 82 | 70 | 76.5 | 84.2 | 69.4 | 82 | 83 | 88 | 808.1 |
| 34 | 82 | 95 | 91.5 | 85 | 70 | 89 | 91.5 | 76.5 | 84 | 92 | 92 | 856.6 |
| 35 | 78 | 95 | 76.5 | 90 | 60 | 84.7 | 90.5 | 80.1 | 80 | 80 | 78 | 845.3 |
| 36 | 59 | 95 | 81.5 | 85 | 65 | 81.2 | 81.2 | 70 | 78.5 | 75 | 83 | 786.6 |
| 37 | 85 | 95 | 82 | 75 | 75 | 77.2 | 71.5 | 65.6 | 65 | 68 | 80 | 763.4 |
| 38 | 68 | 92 | 87.5 | 90 | 70 | 81.5 | 82.7 | 75.2 | 69.5 | 67 | 88 | 829.2 |
| 39 | 91 | 95 | 79 | 80 | 80 | 79.2 | 90.2 | 80.4 | 75.5 | 81 | 90 | 837.9 |
| 40 | 92 | 98 | 95 | 82 | 80 | 90.7 | 86.5 | 96 | 92.5 | 92 | 92 | 902.3 |
| Gen'l aver. | 77.5 | 93.7 | 84.5 | 79.8 | 89.2 | 78.4 | 84.3 | 77.2 | 75.4 | 72.5 | 86.8 | |

* The general average of the candidates is based on subject values as rated by the board. The averages in each subject are on a basis of 100. 1,000 is the total perfect mark as rated by the board. The ratings assigned to each subject will be found at the head of each column.

### ANATOMY

*Examiner,* Dr. Herbert Harlan, Baltimore.

*Associate examiners* in practical anatomy: Drs. A. S. Begg, R. M. Green and E. A. Boyden.

*Written Examination.*—1. Describe the stomach briefly, giving gross structure, blood and nerve supply. 2. Locate and describe two ductless glands, giving both gross and microscopic structure. 3. Give attachments, action and nerve supply of the following muscles: (*a*) digastric; (*b*) pectoralis minor; (*c*) triceps extensor cubiti; (*d*) obliquus capitis superior. 4. Give the embryologic basis for: (*a*) median and bilateral hare-lip; (*b*) cleft palate; (*c*) umbilical, urinary and fecal fistulas. 5. Describe the radiocarpal articulation, including relations with tendons, vessels and nerves in immediate vicinity.

*Oral Examination.*—The following is a list of specimens, microscopic and gross, used at this examination: von Kupffer's cells (endothelium) of the liver; islands of Langerhans (islands of the pancreas); medullated nerve fiber in a nerve trunk; diaster, anaphase (cell division); osteoblasts in bone formation; nucleus gracilis; median lemniscus (fillet); corpus callosum; internal capsule; hippocampus; right os calcis; femur, anterior intertrochanteric line; internal condyle; internal auditory meatus (structures passing through it); clitoris; superior thyroid artery; internal carotid; musculospiral nerve, ulnar nerve; caudate lobe, round ligament; flexor carpi radialis muscle; mediocephalic vein; anterior coronary artery; omohyoid muscle; middle colic artery (cross-section); lacrimal duct (cross-section); subclavian artery (cross-section).

### PHYSIOLOGIC CHEMISTRY

*Examiner,* Dr. Victor C. Vaughan, Ann Arbor, Mich.

*Associate examiner,* Dr. Cyrus H. Fiske.

*Written examination.*—Five out of the ten questions are to be answered. 1. Give in detail the physiology of the secretion of gastric juice, its chemical composition and its digestive action on food. 2. Give the chemical composition of bile, the origin and destination of each of its constituents and its physiologic action. 3. Give the chemical composition of the blood, including that of the red and white corpuscles and the plasma, and tell the most marked quantitative variations in these constituents in disease. 4. Give the chemistry and origin of each nitrogenous constituent of normal urine and tell the most marked variations in these in disease. 5. Discuss accessory food factors or vitamins and the diseases which are caused by deficiencies in these factors. 6. Discuss the chemistry of the cerebrospinal fluid and its variations, and their diagnostic value in disease. 7. Discuss the chemistry of bacteria, and the difference between bacterial poisons and bacterial toxins. 8. Discuss the formation of amino-acids in the body; tell where they are formed; what changes occur in them in normal metabolism; in what form they are eliminated, and how these processes are modified by disease. 9. Discuss the metabolism of carbohydrates in health and in disease. 10. Discuss metabolism of cholesterin-containing bodies in health and in disease, and state what endocrine glands, if any, affect this metabolism.

*Practical examination.*—1. Make a chemical and microscopic examination of three samples of urine. 2. Make a chemical examination of two samples of gastric juice, determining the kind and amount of free and combined acids in one of these. 3. Determine the nonprotein nitrogen in a sample of blood serum.

### MATERIA MEDICA, PHARMACOLOGY AND THERAPEUTICS

*Examiners.*—Drs. W. L. Bierring, Des Moines, Ia.; H. D. Arnold, Boston.

*Associate examiners* in pharmacology.—Drs. Reid Hunt, Worth Hale, G. Philip Grabfield.

*Written Examination.*—(*a*) Name three members of the atropin group of drugs. (*b*) Discuss the action of atropin on the heart. (*c*) Discuss the action of atropin on the gastro-intestinal tract. 2. Discuss the action of camphor in the treatment of acute pneumonia. 3. (*a*) Give a classification of diuretics, and one example of a drug belonging to each class. (*b*) Name a drug used to render urine alkaline and the proper dosage. (*c*) Name a drug used to render urine acid and the proper dosage. (*d*) Name a drug used to prevent the growth of bacteria in the kidneys and bladder, and the proper dosage. (*e*) Write a prescription containing a diuretic drug, with full directions to the patient, and state the purpose intended. 4. Name four preparations of the endocrine glands that have recognized positive therapeutic value. (*b*) Give the indications for the use of three of them. 5. Give the preparations of mercury used for therapeutic purpose, the indications and proper dosage of each.

*Practical Examination.*—1. Demonstration of the principles involved in the preparation of a solution of arsphenamin for intravenous injection. (*a*) In what form is the arsphenamin in the solution made directly from the contents of the ampule? What would be the effect if this solution were injected? (*b*) What happens when sodium hydroxid is added? (*c*) When an excess of sodium hydroxid is added? What is the drug present now? (*d*) Why is sodium hydroxid and not potassium hydroxid used?

The candidate was required to interpret and explain a series of tracings indicating the action of drugs on the circulation. The candidate was asked to identify ten drugs in the bottles by placing the number, appearing on the bottle, immediately before the name of the drug, in the following list, selected as being the substance contained in it: barbital; liquor cresolis comp.; linamentum camphorae; hydrargyri chloridum mite; tinct. opii camph.; opii pulvis; paraldehydum; digitalis; chloralum hydratum; liquor potasii arsenitis.

### OBSTETRICS

*Examiner.*—Dr. Austin Flint, New York.

*Associate examiners.*—Drs. F. S. Newell, W. A. Ham, D. J. Bristol, Jr., John B. Swift, F. C. Irving, F. S. Kellogg and T. R. Goethals.

*Written Examination.*—1. What are the mechanical causes for the following movements in the mechanism of labor: (*a*) Forward rotation of the occiput in a normal (L. O. A.) case? (*b*) Forward rotation of the occiput in an R. O. P. case? (*c*) Backward rotation of the occiput in an R. O. P. case? (*d*) Describe in detail the (*a*) local, and (*b*) general conditions which would indicate the artificial termination of pregnancy at about the seventh month by: (1) Vaginal hysterotomy. (2) Bags. (3) Bougie or gauze packing. 3. Define eclampsia. What is its etiology? What is its pathology? What is its preventive treatment? 4. What are the chief causes of fetal death during labor, and how would you guard against such an occurrence? 5. In a prolonged second stage of labor discuss the indications and describe the technic of each of the following methods of treatment: low forceps; episiotomy; pituitary extract.

### GYNECOLOGY

*Written Examination.*—1. Describe in detail the management of a case of acute pelvic peritonitis. 2. What are the indications and contraindications for a curettage? 3. Give a brief account of the relation of gynecology and the organs of internal secretion. 4. Classify tumors of the ovary. 5. What are the indications for the use of: Vaginal tampons? Ring pessaries? Stem pessaries?

*Practical Examination.*—During the written examination each candidate was required to make demonstrations on the manikin and to explain different obstetric operations.

### HYGIENE

*Examiner.*—Surgeon-General H. S. Cumming, Washington, D. C.

*Written Examination.*—(Answer any five).—1. Discuss the factors involved in the transmission of tuberculosis, and indicate the most promising lines of attack on the tuberculosis problem. 2. How may typhoid fever be controlled in military establishments; in large cities; in rural communities? 3. What measures are at our disposal for the control of the bubonic type of plague? 4. How would you deal with an outbreak of typhus fever? 5. Discuss the epidemiology of pellagra; how may the disease be prevented? 6. Discuss the advantages of medical inspection of schools.

### MEDICINE

*Examiners.*—Drs. H. D. Arnold, Boston; Lewis A. Conner, New York; W. L. Bierring, Des Moines, Ia.

*Associate examiners.*—Drs. H. A. Christian, Channing Frothingham, Francis W. Peabody, C. W. McClure, Donald McPherson, Arthur B. Lyon, John L. Ames, R. C. Larrabee, F. W. Palfrey, Thomas J. O'Brien, Thomas E. Buckman, W. R. Ohler, C. S. Burwell, H. M. Marvin, W. D. Smith, Paul A. White, Basil Jones, Chester Jones.

*Written Examination.*—(Answer th. first six questions and four from questions 7 to 12—a total of ten questions).—1. You are called to treat a girl, aged 8 years, who has been attending school until the day of

your visit. After a restless night she complains of a sore throat, general malaise and is indisposed to eat. Her mother thought she was feverish and is alarmed because there have been a few cases of diphtheria recently in the neighborhood. At 10 a. m. you find the temperature 102, the pulse 108 and the respiration 20. She appears to be moderately sick. (*a*) What signs and conditions in the throat would warrant a provisional diagnosis of diphtheria at this visit? (*b*) What considerations would influence your decision as to the immediate use of diphtheria antitoxin? (*c*) If you decided to use it at once, instead of waiting for a report from a culture, what dosage would you employ? (*d*) If the diagnosis is confirmed by the report on the culture, how would you proceed with the further use of antitoxin? 2. (*a*) What physical signs would warrant a diagnosis of aneurysm of the transverse arch of the aorta without the evidence of a roentgen-ray examination? (*b*) How would you treat such a case? 3. On what symptoms and physical signs would you make a diagnosis of cancer of the liver? 4. Discuss the significance of hematuria. 5. A man, aged 26 years, after three days of malaise, anorexia and increasing headache, has quit work. (*a*) What evidence would make you strongly suspect typhoid fever? (*b*) How would you treat the case, pending a report on the Widal test? (*c*) What developments would warrant a diagnosis of typhoid fever in case the Widal test were reported negative five days later? (*d*) Briefly outline the dietetic treatment of a patient moderately sick with typhoid fever. (*e*) What would you do in case the patient passed about 2 ounces of blood in a stool? 6. Discuss the relation of general paresis to syphilis. 7. Discuss the etiology of acute chorea in children and outline treatment. 8. What conditions call for the transfusion of blood? 9. Discuss the question of the infectiousness of pulmonary tuberculosis in the absence of demonstrated tubercle bacilli in the sputum. 10. Describe the appearance and course of a moderate attack of facial erysipelas, and its treatment. 11. Incubation period, symptoms, prophylaxis and treatment of tetanus. 12. Discuss the etiology, diagnosis and treatment of rabies.

*Clinical Examination.*—This was held in the wards of the Massachusetts General Hospital, Peter Bent Brigham Hospital and the Boston City Hospital, each candidate being assigned to a long case and then quizzed on his findings. Following this the candidate was assigned to two short cases representing some well defined cases of diseases of the heart, lungs, abdominal organs and general medical ailments.

*Clinical Laboratory.*—This was also held in each of the three hospitals and consisted of microscopic examination of two specimens of blood and one specimen of urinary sediment. Each candidate made a report on these examinations and was quizzed by the examiner.

### SURGERY

*Associate examiners.*—Drs. Edward G. Nichols; John Homans; C. A. Porter; William C. Quimby.

*Assistant examiners.*—Drs. Elliott C. Cutler; R. B. Greenough; Richard H. Miller, T. K. Richards, T. W. Lanman, I. J. Walker, A. R. Kimpton, R. C. Cochrane.

*Written Examination.*—(Answer any five.)—1. Give symptoms, prognosis and treatment of fracture of the base of the skull. 2. (*a*) Name the topographical landmarks employed in the operation of thyroidectomy. (*b*) Discuss the parathyroid glands. 3. (*a*) Diagnosis, differential diagnosis and prognosis of carcinoma of the breast. (*b*) Discuss the subject of metastasis in this condition. 4. (*a*) Give varieties, symptoms, prognosis and treatment of acute intestinal obstruction. (*b*) Discuss the cause of death. 5. Give symptoms, pathology and treatment of fracture of the pelvis. 6. Give symptoms, prognosis and treatment of spinal cord tumor at the tenth and eleventh dorsal segments of the spinal cord.

*Clinical Examination.*—This was held in the wards of the Massachusetts General Hospital, Peter Bent Brigham Hospital and the Boston City Hospital. Each candidate was given at least three cases, and these were chosen from surgical cases which were being treated in the wards of these respective hospitals.

*Operative Surgery.*—Each candidate was given one operation on a dog that had previously been killed with ether, selected from the following list: trephine; tracheotomy; thoracotomy; appendectomy; lateral intestinal anastomosis; inguinal hernia; suprapubic cystotomy; amputations of legs and feet, and also a practical examination in regional anatomy on the living human model.

### SURGICAL SPECIALTIES

*Examiners.*—Dr. Herbert Harlan, Baltimore, Massachusetts General Hospital, Eye and Ear Dispensary; Dr. David A. Strickler, Denver, Boston City Hospital.

*Associate examiners.*—Drs. H. B. Stevens, C. R. Mills, W. T. Haley, Louis M. Freedman, J. J. Corbett, Townsend W. Thorndike, William P. Boardman, Philip Hammond, H. P. Cahill, Alexander Quackenboss, Harris P. Mosher, Fred H. Simmons, Harry A. Barnes.

*Examiners in Diseases of the Skin.*—Drs. E. Lawrence Oliver, William P. Boardman, T. W. Thorndike.

Each candidate was given examples of ordinary diseases of the eye, ear, nose and throat, as well as eye ground examination, and each candidate was given examples of ordinary skin disease to diagnose.

### BACTERIOLOGY, SEROLOGY AND PARASITOLOGY

*Examiners.*—Surgeon-General E. R. Stitt, U. S. Navy; Colonel J. F. Siler, M. C., U. S. Army.

*Associate examiner.*—Dr. H. C. Ernst.

*Assistant examiners.*—Dr. E. E. Tyzzer, N. C. Foot, Calvin Page, M. Fabyan, Philip Castleman.

*Written Examination.*—1. (*a*) Name the laboratory tests to be employed in arriving at or excluding a diagnosis of typhoid or the paratyphoid fevers in a patient with undetermined fever, indicating the stage of the disease at which each test is of greatest value. (*b*) Discuss the bacteriologic and serologic methods for identifying *Bacillus typhosus, Bacillus paratyphosus* A and *Bacillus paratyphosus* B. (*c*) What is meant by group agglutinins and by specific agglutinins? 2. (*a*) Name the communicable diseases of the United States transmitted through discharges from the respiratory tract. (*b*) Name the communicable diseases of the United States transmitted through discharges from the intestinal tract. (*c*) Name the communicable diseases of the United States for which insects act as true intermediate hosts. 3. (*a*) What is meant by "blood grouping," and what is its practical application in the practice of medicine? (*b*) Outline briefly the standard method for serologic examination of water supplies. 4. (*a*) What are the points of differentiation between the nonsexual forms of full-grown tertian, quartan and estivo-autumnal malarial parasites, as observed in stained blood smears? (*b*) Discuss briefly recent advances in our knowledge of the etiology of yellow fever. 5. (*a*) Indicate diagrammatically the difference in appearance between the ova of the following helminths: *Uncinaria americana, Ascaris lumbricoides, Trichuris trichiura, Oxyuris vermicularis.* (*b*) What are the main points of differentiation between full-grown segments of beef and pork tapeworms?

*Laboratory Examination.*—Each examiner is provided with tubes, plates, etc., of various standard culture mediums. The candidate is examined as to the composition, uses, technic of inoculation and study of these. There are also provided plates of plain agar, blood agar, etc., showing colonies, and the candidate is examined as to his ability to recognize and discuss colony characteristics with the unaided eye and magnifying glass. Various serologic preparations, such as Wassermann or other complement fixation tests, microscopic agglutination precipitin reactions, are provided, and interpretation of these is required. Specimens of intestinal parasites and their ova, together with stained smears of blood preparation of parasites, were given the candidates for identification.

### PATHOLOGY

*Examiner.*—Dr. L. B. Wilson, Rochester, Minn.

*Associate examiners.*—Drs. S. Bert Wright, M. Fabyan, N. C. Foot, V. C. Jacobson.

*Written Examination.*—The following questions for record only, and will have no bearing on the candidate's standing: 1. About how many postmortems have you attended? 2. In about how many have you assisted? 3. In about how many have you been the responsible pathologist?

Answer five of the following questions: 1. Discuss the chronic inflammatory changes which may occur in the urinary bladder. 2. Contrast in parallel columns the essential characteristics of the blood pictures in: (*a*) Pernicious anemia. (*b*) Lymphatic leukemia. (*c*) Advanced gastric cancer. 3. Discuss the more important chronic pathologic changes which may occur in the knee-joint. 4. Discuss the pathology of typhoid fever. 5. Give in detail the necropsy technic in a case of suspected poisoning by mouth. 6. Discuss the pathology of wound healing. 7. Discuss heredity in relation to malignant neoplasms.

*Laboratory Examination.*—Each candidate was given gross specimens and microscopic sections chosen from the following: *Gross.*—Acute fibrinous pericarditis; acute fibrinous pericarditis; lobar pneumonia; chronic tuberculosis; infarction; cirrhosis; cystic colloid goiter; arteriosclerosis and cysts; nephroma (carcinoma); carcinoma with ulcer; typhoid ulcers; hernia of cervix; carcinoma of cervix; carcinoma of malignant papilloma.

*Microscopic.*—Chronic glomerulonephritis; hyperplasia of thyroid; carcinoma of lip, etc.

### PHYSIOLOGY

*Examiner.*—Dr. W. S. Carter, Galveston, Texas.

*Associate examiners.*—Drs. J. C. Auh, C. K. Drinker, W. O. Fenn, W. E. Swift, P. G. Stiles, F. H. Pratt, J. E. Uridil, Dr. McKeene, Dr. Cattell.

*Written Examination.*—Answer any five of the following questions: 1. (*a*) What is the influence of the inorganic salts of the blood upon the heart? (*b*) Where does the contraction begin and how is it conducted to the other parts of the mammalian heart? 2. How does the composition of the alveolar air compare with that of the tidal air, and how does the exchange of gases take place between the air and the blood in the lungs? 3. What are the functions of the bile, and what is the effect upon intestinal digestion when bile is prevented from entering the alimentary canal by a biliary fistula? 4. What part does the pancreas take in carbohydrate metabolism, and what disturbances of metabolism result when the pancreas is removed? 5. Describe the normal movements of the small and large intestine. 6. Tell how the eye accommodates for near and far objects.

*Practical Examination.*—Each candidate was given an examination on clinical pulse tracings, reflexes, blood pressure, heart sounds and physiologic tracings.

### MEDICAL JURISPRUDENCE

*Examiner.*—Surgeon-General H. S. Cumming, U. S. Public Health Service, Washington, D. C.

*Written Examination.*—1. What are the privileges and obligations of the physician under the Harrison Narcotic Act? 2. What are the clinical manifestations of acute arsenic poisoning? Of subacute or chronic poisoning by the same agent? 3. What are the clinical manifestations of atropin poisoning, and how would you confirm the clinical diagnosis? 4. What is the object of laws requiring examination and license for practitioners of medicine? 5. Discuss the duties of a coroner.

## Colorado April Examination

Dr. David A. Strickler, secretary, Colorado State Board of Medical Examiners, reports the written examination, held at Denver, April 5, 1921. The examination covered 8 subjects and included 80 questions. An average of 75 per cent. was required to pass. Of the 12 candidates examined, 8 passed and 4 failed. Fourteen candidates were licensed by reciprocity. The following colleges were represented:

| PASSED | Year Grad. | Per Cent. |
|---|---|---|
| College of Medical Evangelists | (1918) | 75.7 |
| Kansas City University of Physicians and Surgeons | (1921) | 85.4 |
| Columbia University | (1915) | 75.1 |
| Osteopaths | 76.6, 79.1, 81.8, | 83, 85.4 |

| FAILED | Year Grad. | |
|---|---|---|
| Kansas City College of Medicine and Surgery | (1921) | 74 |
| St. Louis College of Physicians and Surgeons | (1920) | 50.5, 66.7 |
| Eclectic Medical College | (1908) | 62.5 |

| LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|---|---|
| University of Alabama | (1914) | Alabama |
| Hahnemann Medical College and Hospital, Chicago | (1903) | Arizona |
| Northwestern University | (1907) | Arizona |
| Northwestern University Woman's Medical School | (1892) | Oklahoma |
| Rush Medical College | (1920) | Illinois |
| Indiana University School of Medicine | (1920) | Indiana |
| University Medical College of Kansas City | (1909) | California |
| University of Missouri | (1903) | Missouri |
| John A. Creighton Medical College | (1920) | Nebraska |
| Columbia University | (1916) | New York |
| Ohio State University College of Medicine | (1916) | Ohio |
| Medico Chirurgical College of Pennsylvania | (1898) | New Jersey |
| University of Toronto | (1905) North Dakota, (1906) | Minnesota |

# Book Notices

TEXTBOOK OF TRACHEO-BRONCHOSCOPY (TECHNICAL AND PRACTICAL). By Sanitätsrat Dr. M. Mann, Senior Physician to the Department for Diseases of Ear, Nose and Throat, in the Municipal Hospital Dresden-Friedrichstadt. Translated by A. R. Moodie, M.A., M.D., Ch.B. Cloth. Price, $9. Pp. 292, with 65 illustrations. New York: William Wood & Co., 1921.

This is a translation of the original German edition which appeared six years ago, few copies reaching the United States owing to the war. Briefly described, the book must be considered as a complete encyclopedia and extensive atlas of tracheobronchoscopy. After a short discussion of the involved anatomy, the history of the subject is reviewed, the author presenting the methods and instruments of the various schools (Killian, von Schrötter, Chiari and others). Several American instruments are described and illustrated with due credit to the "inventive spirit and that great sense of personal independence" of Americans. It is the necessary omission of mention of the specially designed instruments which have appeared in the last five years from the hands of such men as Jackson, Lynch and Arrowsmith which offers the only criticism to the work. The actual text is built of case histories, each subject containing extensive bibliographies. Though fully one third of the book is devoted to the extraction of the various types of foreign bodies, the author lays great stress on the endoscopal findings in tumors and general diseases of the trachea and the bronchial system, and similarly in the findings in lesions of these structures due to disease of the neighboring parts. It is evident from the text that the author hopes (with Ephraim, Freudenthal and others) that tracheobronchoscopy will become a common medium for the treatment of many intrathoracic and pulmonary conditions.

GYNECOLOGY. By Brooke M. Anspach, M.D., Associate in Gynecology, University of Pennsylvania, with an Introduction by John G. Clark. Cloth. Price, $9. Pp. 752, with 526 illustrations. Philadelphia: J. B. Lippincott Company, 1921.

This book appears to be one of the most satisfactory of the many works on gynecology now available. The author's long experience in the teaching and practice of gynecology are reflected in the spontaneous, first-hand style which characterizes the text. The subdivision of the subject which the author announces in his preface, and which he follows in his book, is into: (1) normal anatomy and physiology; (2) morbid anatomy and physiologic abnormalities that are dependent on developmental defects; (3) the acquired causes of disease; (4) general symptomatology, with methods of investigation, and (5) systematic arrangement and description of the diseases affecting the generative tract, with morbid anatomy, symptomatology, diagnosis and treatment. The opening chapter deals briefly but satisfactorily with the embryology of the female generative organs. An excellent innovation is that of considering in the next chapter the various developmental anomalies which are encountered clinically. The chapter on anatomy is adequate, that on physiology perhaps not so full as one might wish, in view of the many recent advances in this growing fringe of gynecology. Especially satisfying is the concise little chapter on female urology, and that on pelvic inflammatory disease, the latter presenting a crystallization of the best modern opinion as to etiology, symptomatology, diagnosis and treatment. The last hundred pages or so is devoted to a useful discussion of such subjects as operative technic, postoperative complications, and mechanical and medicinal aids to treatment. There is also a short chapter on radium and roentgen-ray therapy, in which this subject of such growing importance to gynecologists is discussed in a sane and conservative manner. It is rather curious to note how authors of textbooks differ in the importance which they assign to various subdivisions of their subjects, as indicated by the amount of space assigned to them. For example, Anspach practically ignores the subject of endocrinology as related to gynecology, devoting to it a scant two pages or so. The author of another popular textbook of gynecology, on the other hand, gives to the subject of internal secretions a solid fifty pages, besides many other references elsewhere in the book. This, of course, includes much unreliable material, and not a little that is rather irrelevant. While the latter plan is not to be commended, it does seem that Anspach's consideration of this subject is much too niggardly, even from the most coldly scientific point of view. An excellent feature is the well selected working bibliography at the end of each chapter. These lists of references are well selected, the only criticism being the incomplete form of many of the references through the omission of volume number, page, etc. The author, contrary to many gynecologists, still appears to consider "pathologic anteflexion" an important factor in dysmenorrhea, and even recommends (page 591), though half heartedly, the various plastic operations on the cervix which are now so happily becoming obsolete. Throughout the work the discussion of therapeutic measures, nonoperative as well as operative, is very meaty, and will be a big help to both general practitioners and specialists. The general get-up of the book is excellent, the typography exceptionally good, and the illustrations numerous and satisfying. In short, the virtues of the book are many, and its faults few, so that it merits a rather emphatic stamp of approval.

INJURIES AND DISEASES OF THE BONES AND JOINTS: THEIR DIFFERENTIAL DIAGNOSIS BY MEANS OF THE ROENTGEN RAYS. By Frederick H. Baetjer, M.D., Associate Professor of Roentgenology, Johns Hopkins University, and Charles A. Waters, M.D., Instructor in Roentgenology, Johns Hopkins University. Cloth. Price, $10 net. Pp. 349, with 333 illustrations. New York: Paul B. Hoeber, 1921.

A more descriptive title of this work would be the "Roentgen-Ray Diagnosis of Injuries and Diseases of the Bones and Joints," for such in fact it is. It is not a treatise on orthopedic surgery, but a valuable and acceptable aid both to the orthopedic surgeon and to the general surgeon in the interpretation of the roentgenographic findings of the structures considered. It is entirely new and based on the authors' personal observations of a varied and abundant clinical material. The illustrations are clear and well selected, and the reading matter is concise. The discussion of bone tumors, with their manner of distribution in the bones and methods of growth, forms an interesting chapter. Much emphasis is placed throughout the text on the influence of age and sex on the pathologic condition and roentgen-ray appearances. The authors also stress the importance of a thorough knowledge of normal and pathologic anatomy as fundamental to proper roentgen-ray interpretation.

FUNCTIONAL DIAGNOSIS. By Max Kahn, M.A., Ph.D., M.D., Director of the Department of Laboratories, Beth Israel Hospital. In Collaboration with Morris Hirsch Kahn, M.D., Chief of Clinic in Cardiovascular Diseases and Internal Medicine, Mount Sinai Hospital Dispensary, and Jacob Rosenbloom, Ph.D., M.D. Foreword by William J. Gies, M.S., Sc.D., Ph.D., Professor of Biological Chemistry, College of Physicians and Surgeons, Columbia University. Leather. Price, $6. Pp. 382, with 52 illustrations. New York: W. F. Prior Company, 1920.

The present volume is apparently a reprint of the section on functional diagnosis appearing in Tice's System of Medicine, although there is nothing on the book to indicate this fact. The text is divided into six chapters, the first three concerning gastro-intestinal, pancreatic and liver function tests by Max Kahn, the fourth chapter, the functional capacity of the circulation by Morris H. Kahn, the fifth, functional tests of endocrine glands by Jacob Rosenbloom, and the sixth, kidney function tests by Max Kahn. The tests are described in detail, all of the various methods used being mentioned. There is, however, very little discussion of the author's personal belief as to the relative value of the various tests. There is an excellent bibliography following each article, and a comprehensive index serves as a guide to the numerous methods described.

MANSON'S TROPICAL DISEASES. A Manual of the Diseases of Warm Climates. Edited by Philip H. Manson-Bahr, D.S.O., M.A., M.D., Physician to the Hospital for Tropical Diseases, London. Seventh edition. Cloth. Price, $10. Pp. 960, with 462 illustrations. New York: William Wood and Company, 1921.

A previous edition of this well known work appeared in 1917. The present edition contains the newer information relative to Noguchi's work on yellow fever. The book has been entirely reset, numerous valuable colored plates and charts have been added, and the reviser has had the assistance of many colleagues of the London School of Tropical Medicine. The book has thus been kept at the high place which it previously occupied as a textbook on tropical diseases.

## Medicolegal

### Decisions Under the Harrison Narcotic Law

*(Rothman et al. v. United States (U. S.), 270 Fed. R. 31; Di Preta v. United States (U. S.), 270 Fed. R. 73; Dysart v. United States (U. S.), 270 Fed. R. 77)*

The United States Circuit Court of Appeals, Second Circuit, in affirming judgments of conviction of Rothman and two Cohens, says that they were indicted for unlawfully selling heroin and for conspiracy respecting such sale. Rothman was a physician, and one of the Cohens was the owner of a pharmacy. The court does not think that the indictment was invalidated because it did not negative certain exceptions in Section 2 of the Harrison Narcotic Law, as the proviso found in Section 8 that it shall not be necessary to negative the exemptions was intended to apply to the entire act. The court also follows the rule that when a government detective, suspecting that a person is engaged in an unlawful business seeks information under an assumed name directly from him, and that person responds thereto, violating a law of the United States, he cannot, when indicted for the offense, set up that he would not have violated the law, if the inquiry had not been made of him by the government official. The meaning of the act is determined by the court, and not by the treasury department. Ignorance of the law excuses no one. It could be no excuse that the defendants relied on a treasury decision which was wrong. If a conspiracy was proved to have existed between the defendants, it was not necessary to prove that all of the defendants did the overt acts which they were alleged to have done. All that was necessary was that one or more of such parties did an act to effect the object of the conspiracy. Every act of each member of the conspiracy in pursuance thereof was in contemplation of law the act of them all, and was evidence against each of them.

The same court, in affirming a judgment of conviction in the second case, wherein Di Preta, a physician, was the defendant, says that the testimony was ample to the effect that he sold to all and sundry so-called prescriptions for what are called "habit-forming drugs," and sometimes suggested that the recipients of these prescriptions should have them filled at one Petraglia's drug store. The indictment was framed under the second section of the Harrison act, and charged Petraglia with dispensing the drug substantially in the language of the statute, which was sufficient. It then charged Di Preta with aiding and abetting under Section 332 of the Criminal Code, which makes a principal of any one who aids or abets in the commission of "any act constituting an offense defined by any law of the United States." The count was not invalid because it did not negative the exceptions of the statute in favor of physicians, nor because it did not give any details as to how or in what manner Di Preta abetted Petraglia. Subdivision *b* of the second section does except the dispensing of drugs by a dealer to a consumer in pursuance of a written prescription (under certain circumstances not here material). But a prescription issued under the circumstances amply shown in this case is not a prescription at all. Consequently it is no exception; nor is it necessary to negative the exceptions under this section of the statute. At common law Di Preta would have been an accessory before the fact; but the penal code makes him a principal. Thus the acts of the principal become the acts of the accessory or aider, and such accessory may be charged as having done the act himself, and be indicted and punished accordingly.

In the third case, wherein the United States Circuit Court of Appeals, Fifth Circuit, affirms a judgment of conviction of defendant Dysart, a physician who was registered under the law, the court holds that there was no variance between the offense charged in the indictment and the evidence adduced where the indictment charged unlawful sales of morphin sulphate and what the defendant did was to issue prescriptions. Nor was there error in admitting evidence to the effect that the defendant had issued prescriptions to a large number of persons other than those described in the indictment, when in his charge to the jury the trial court limited the effect of such evidence to the intent with which the prescriptions for persons named in the indictment were issued, and distinctly charged the jury that conviction could not be based on prescriptions for persons not so named. As so limited and explained, the evidence was admissible. It threw light on the intent of the defendant in respect to the vital question in the case of whether he was lawfully dispensing drugs in the course of his practice, or was using his profession of physician to cover up a violation of the law.

### Reasonableness of Requiring Morbidity Reports

*(Smythe v. State (Miss.), 86 So. R. 870)*

The Supreme Court of Mississippi, Division B, holds that, under a provision of the code empowering the state board of health to make and publish all reasonable rules and regulations necessary to enable it to discharge its duties and powers to carry out the purposes and objects of its creation, a regulation requiring every licensed physician practicing in the state to file a morbidity report on the first day of each month was not unreasonable. The court says that there was no merit in the contention that the rule was unreasonable. Its purpose was to enable the health authorities to take proper and prompt measures for the prevention and spread of disease, and to promote the general health of the people. Not only was it not unreasonable, but it was an important and valuable aid in the preservation of the public health. But in the prosecution of a physician for knowingly violating such a rule or regulation of the state board of health, where the evidence wholly failed to show that the defendant had knowledge of the regulation, or that there had ever been any such publication of the regulation as to charge him with knowledge thereof, a peremptory instruction requested by him for a verdict in his favor should have been granted. The only attempt in this case to show any sort of publication of the rule, or that defendant Smythe had knowledge thereof, was found in the testimony of a witness for the state who testified that there was in the office of the state board of health a mailing list consisting of about 13,000 names, including about 1,700 physicians; that the name of Dr. Smythe appeared on that mailing list; and that it was customary to mail the publications of the board to the people whose names appeared on that list. The defendant testified that he had never received a copy of these regulations, and that he had no knowledge of the existence of the rule requiring reports to be made on the first day of the mouth, and that, prior to the administration of a named county health officer, it had been the custom in that county to file these reports on or about the tenth day of each month, and that in so doing the physicians were acting under the directions of the county health officers. There was no presumption that the defendant had knowledge of a mere rule or regulation of the state board of health, and under the evidence, the peremptory instruction requested by the defendant should have been granted. Therefore the court reverses a judgment of conviction of the defendant of unlawfully and knowingly violating a rule or regulation of the state board of health, and discharge him.

## Society Proceedings

### COMING MEETINGS

Amer. Acad. of Ophthal. and Otolaryngology, Philadelphia, Oct. 17-22.
Amer. Assn. of Obst., Gynec. and Abdom. Surgs., St. Louis, Sept. 20-22.
American Association of Railway Surgeons, Chicago, Oct. 18-20.
American Electro-Therapeutic Association, Washington, D. C., Sept. 7-10.
American Roentgen Ray Society, Washington, D. C., Sept. 27-30.
Colorado State Medical Society, Pueblo, Oct. 5-7.
Idaho State Medical Association, Twin Falls, Oct. 6-7.
Indiana State Medical Association, Indianapolis, Sept. 28-30.
Kentucky State Medical Association, Louisville, Sept. 27-29.
Mississippi Valley Medical Association, St. Louis, Oct. 13-15.
New England Surgical Society, Worcester, Mass., Sept. 21-22.
Pennsylvania, Medical Society of the State of, Philadelphia, Oct. 3-6.
Utah State Medical Association, Salt Lake City, Sept. 13-14.
Vermont State Medical Society, St. Albans, Oct. 13-14.
Virginia, Medical Society of, Lynchburg, Oct. 18-21.
Washington State Medical Association, Seattle, Sept. 2-3.
Wisconsin, State Medical Society of, Milwaukee, Sept. 7-9.
Wyoming State Medical Society, Casper, Sept. 6-8.

# Current Medical Literature

## AMERICAN

Titles sparked with an asterisk (*) are abstracted below.

### American Journal of Diseases of Children, Chicago

August, 1921, **22**, No. 2

*Calcium and Phosphorus in the Serum in Relation to Rickets. J. Howland and B. Kramer, Baltimore.—p. 105.
Topograpic Anatomy of Its Changes at Birth and in Period of Newborn. G. J. Noback, Minneapolis.—p. 120.
*Lesions of Corpus Striatum in Childhood; of Clinical Cases Illustrating Various Syndromes. B. Crothers, Boston.—p. 143.
*Pyloric Stenosis. L. W. Sauer, Evanston, Ill.—p. 166.
*Congenital Aneurysmal Dilation of Ductus Botalli. D. M. Dry, Philadelphia.—p. 181.
*Interpretation of Seasonal Variation of Rickets. A. F. Hess and L. J. Unger, New York.—p. 186.
Studies of Infant Feeding. Caseins of Cow's Milk and Human Milk in Their Relation to Infant Feeding. Action of Rennin on Casein. A. W. Bosworth, Boston.—p. 193.
Vital Capacity of Lungs of Children. P. W. Emerson and H. Green, Boston.—p. 202.
*Fragility of Red Blood Corpuscles in Infectious Diseases. R. M. Greenthal and Wm. S. O'Donnell, Ann Arbor, Mich.—p. 212.
*Rapid Clinical Method for Determination of Reducing Substance in Cerebrospinal Fluid: Methylene Blue Method. Michio Kasahara and Shunjiro Hattori, Kyoto, Japan.—p. 218.

**Calcium and Phosphorus in Rickets.**—Data are presented by Howland and Kramer to show that nonrachitic infants and young children, the concentration of calcium is from 10 to 11 mg. per hundred c.c. of serum. The concentration of inorganic phosphorus is about 5 mg. per hundred c.c. of serum. The constancy of the concentration of calcium, phosphorus and bicarbonate in the serum of normal children undoubtedly determines the constancy of the inorganic composition of normal bone. During the period of active rickets, the calcium concentration may be normal or slightly reduced. The reduction does not seem to depend directly on rickets. There are reasons for believing that in many instances the reduction is associated with a latent form of tetany. The inorganic phosphorus of the serum is regularly reduced in active rickets, sometimes to an extreme degree. During the process of healing, whether occurring spontaneously or as the result of the administration of cod liver oil, the phosphorus content of the serum gradually rises to a normal figure and often somewhat above this. Relapses are accompanied by a fall in the phosphorus concentration of the serum. All the children under 2½ years of age, in whom the authors found an inorganic phosphorus content of the serum of 3.0 mg. or less, have been suffering from active rickets.

**Lesions of Corpus Striatum.**—Six cases are presented by Crothers. A number of syndromes characterized by disturbances of associated movements, variations in muscle tone, and speech defects are definitely associated with sharply localized lesions of the corpus striatum. They are easily distinguished, in typical cases, from spastic pyramidal tract syndromes and from the ordinary chorea. In atypical cases confusion necessarily arises and careful sorting out of signs is essential. Crothers believes that a critical reexamination of children showing involuntary movements over a period of months or years, will reveal unsuspected cases. Moreover, the six cases reported demonstrate the dangers of relying on casual impressions in judging mental status, when speech defects and motor disorders complicate the picture. Experience with the syndromes shows fairly conclusively that such disorders cannot be considered rarities, and also demonstrates that general attention has not been called to this group.

**Thick Cereal in Pyloric Stenosis.**—The use of thick cereal in thirty-five cases of pyloric stenosis brought about a rapid gain in weight in twenty-four cases and was effective in twenty-eight of the thirty-five cases. Sauer points out that the preparation and administration of the food are important. Patients should be operated on if the thick cereal fails to bring about improvement in from one to two weeks. Under certain conditions, one should not wait too long before operation. Complications following operation are not infrequent. Thick cereal feedings may be valuable when vomiting continues after operation.

**Congenital Aneurysmal Dilatation of Ductus Botalli.**—The heart described by Dry had a patulous ductus arteriosus which was dilated to the extent of being aneurysmal.

**Seasonal Variation of Rickets.**—Hess and Unger show that milk from pasture-fed cows (summer milk) failed to prevent the development or to decrease the incidence of rickets during the winter. On the other hand, treatment with ultraviolet rays or with sunlight brought about calcification of the bones during the winter as demonstrated by means of the roentgen rays. These contrasting results lead to the conclusion that hygienic factors, especially sunlight, and not dietetic factors, play the dominant rôle in the marked seasonal variation of this disorder.

**Fragility of Erythrocytes in Infectious Diseases.**—No distinctive reaction to the fragility test was found by Greenthal and O'Donnell in any of the infectious diseases studied, accordingly the fragility test has no diagnostic value. Fever per se has no effect on the fragility of the red cells. In certain cases of infectious diseases one may find a distinct increased resistance. These cases are usually of great severity and the prognosis is grave.

**Determination of Reducing Substance in Cerebrospinal Fluid.**—The procedure of the methylene blue method devised by Kasahara and Hattori for the qualitative determination of the glucose in the spinal fluid is as follows: Two-tenths c.c. of cerebrospinal fluid is drawn up with a graduated pipet into the test tube. One c.c. of 0.004 per cent. methylene blue solution (Methylenblau f. Bac. Gruebler) is added to the fluid, and then three drops of 10 per cent. potassium hydroxid solution are poured into it. This mixture is heated and boiled for a few seconds. If it contains 0.05 per cent. glucose, the depth of the color varies, strictly depending on the quantity of this substance present. The quantitative determination of the glucose in the spinal fluid by means of the methylene blue solution is best performed in the following way: To 1 c.c. of 0.004 per cent. methylene blue solution are added three drops of 10 per cent. potassium hydroxid solution. Adding the spinal fluid to be tested from a buret, the minimal volume of it, with which this mixture becomes perfectly colorless by boiling is determined. When the minimal volume (c.c.) is determined, the amount of the glucose present is calculated from the formula: $\frac{0.01}{n} = p$, where p is the number of c.c. of cerebrospinal fluid used. If, for example, the minimal volume of the spinal fluid used is 0.5 c.c. the amount of the glucose present is: $\frac{0.07}{0.5} = 0.02$ per cent.

### American Journal of Medical Sciences, Philadelphia

June, 1921, **161**, No. 6

Breathing of Air of Lowered Oxygen Tension as Test of Circulatory Function. A. Stengel, C. C. Wolferth and Leon Jonas, Philadelphia.—p. 781.
*Broncho-Esophageal Fistula and Traction Diverticulum. J. B. Hawes, Boston.—p. 791.
Chronic Nephritis: From Point of View of General Practitioner. Its Diagnosis, Prognosis and Treatment. A. I. Ringer, New York.—p. 798.
*Treatment of Tetanus. S. O. Freedlander, Cleveland.—p. 819.
*Gonorrheal Endocarditis. D. C. Smith, Charlottesville, Va.—p. 824.
Epidemic Encephalitis: Five Cases; Necropsy Findings. Predominating Symptomatology; Relation to Influenza. K. M. Lewis, G. King and R. Dinegar, New York.—p. 831.
*Report of Epidemic with Certain Cases Presenting Picture of Meningo-Encephalitis. C. E. Nixon and T. H. Sweetser, Minneapolis.—p. 845.
*Aneurysm of Hepatic Artery. Report of Case. E. Weiss, Philadelphia.—p. 859.
*Primary Sarcoma of Appendix: Case of Lymposarcoma of Appendix with Acute Intestinal Obstruction in Young Woman. H. I. Goldstein, Camden, N. J.—p. 870.
Influenza and Epilepsy: Relations of Mental Disease and Influenza. K. A. Menninger, Topeka, Kan.—p. 884.

**Broncho-Esophageal Fistula.**—Hawes reports two cases. One was a case of simple broncho-esophageal fistula following an acute pulmonary infection. The fistula healed spontaneously and the lung seemed to suffer no ill effects from the passage through it of barium or food, liquid or solid. In the second case a definite diagnosis of pulmonary tuberculosis had been made in 1916 and in 1919, based on (1) signs in the lungs and (2) hemorrhages. The patient, a very conscien-

tious woman, had practically isolated herself from her children for fear of infecting them. Roentgen-ray examination demonstrated a sinus communicating between the process in the lung and the esophagus.

**Treatment of Tetanus.**—Four cases of tetanus are reported by Freedlander in which recovery occurred after injecting large doses of antitoxin intravenously. The amounts administered were 213,000, 755,000, 189,000 and 188,000 units, respectively.

**Gonorrheal Endocarditis.**—The diagnosis in Smith's case was based on a recent history of gonorrhea, negative cultures, morphology of organism in smears and the character of lesions found at necropsy. None of the above findings alone would be sufficient for making a diagnosis of gonorrheal endocarditis, but when taken together they prove beyond a doubt that the gonococcus is the etiologic factor.

**Meningo-Encephalitis.**—Nixon and Sweetser report eleven cases divided into three groups according to the symptomatology. The first group presented the syndrome of an acute toxic condition; the second group that of a meningitis or meningo-encephalitis, and the third group the clinical and pathologic findings of epidemic encephalitis. In these cases there was a definite diminution of acuteness in the latter cases and there was an evident contagiousness present in the whole group of cases.

**Aneurysm of Hepatic Artery.**—Fifty-five cases of aneurysm of the hepatic artery are recorded in the literature. The main clinical features are pain, jaundice and hemorrhage. Rarely are tumor or bruit present and then only in the terminal stages. Under favorable circumstances the treatment is ligation of the hepatic artery. Weiss reports one case with necropsy findings.

**Primary Sarcoma of Appendix.**—Only seventeen cases of primary sarcoma of the appendix were found recorded in the entire medical literature of the world by Goldstein. All the cases showed symptoms resembling attacks of acute or recurrent appendicitis. Golstein adds one case to the list.

## American Journal of Public Health, Boston

July, 1921, **11**, No. 7

Vitamins and Certain Aspects of Their Relation to Public Health. J. C. Drummond, London.—p. 593.
Sanitary Inspection. A. Wolman, Baltimore.—p. 598.
What Health Officers Can Do to Promote Rat Extermination. E. A. Goldman, Washington, D. C.—p. 606.
Accurate Method for Determining Alkalinity in Hypochlorite Solutions. J. A. Wesener and G. L. Teller, Chicago.—p. 613.
Deficiency Diseases in Labrador. V. B. Appleton, San Francisco.—p. 617.
Finding Tuberculosis Through Survey and Clinics. M. J. Fine, Newark, N. J.—p. 622.
Reporting Communicable Diseases—Physician's Point of View. C. E. McCombs, New York City.—p. 624.
Epidemiologic Study of Endemic Focus of Leprosy. M. F. Boyd and W. F. Fox, Galveston, Texas.—p. 628.
Seasonal Variation in Multiplication Rate of Micro-organisms Within the Body. W. F. Wells, Albany, N. Y.—p. 636.
Office System in Public Health Administration. R. Britten, Washington, D. C.—p. 639.

## American Journal of Roentgenology, New York

June, 1921, **8**, No. 6

Relation of Science of Physics to Radiation Therapy. H. Schmitz, Chicago.—p. 285.
*Roentgen Ray Treatment of Hypertrophy of Prostate. S. Stern, New York.—p. 292.
*Roentgen Ray Studies of Heart. C. L. Martin, Dallas, Texas.—p. 295.
*Analysis of Eleven Hundred Roentgen Ray Examinations of Gastro-Intestinal Tract. R. H. Lafferty, Charlotte, N. C.—p. 315.
Congenital Atresia of Esophagus. E. H. Skinner, Kansas City, Mo.—p. 319.
Roentgen Ray Work from Viewpoint of Internist. G. Dock, St. Louis.—p. 321.
Intensity of Scattered Roentgen Rays in Radiography. R. B. Wilsey, Rochester, N. Y.—p. 328.
Measurements of Scattered Radiation. M. B. Hodgson, Rochester, N. Y.—p. 338.
Bucky Diaphragm. H. W. Van Allen, Springfield, Mass.—p. 340.
Some Accessories to Potter-Bucky Diaphragm. D. R. Bowen, Philadelphia.—p. 343.

**Roentgen-Ray Treatment of Prostate Hypertrophy.** — Roentgen-ray treatment of hypertrophy of the prostate has been found of value by Stern. Many of the patients so treated will not only be temporarily benefited but may escape operation altogether. Patients whose condition is far advanced, those that have reached catheter life, will be only temporarily and subjectively benefited by the treatment. Prophylactic roentgen-ray treatments, to safeguard against recurrence of symptoms in improved cases, have also been found of value.

**Roentgen-Ray Heart Studies.** — Diseases of the myocardium, endocardium, pericardium, great vessels and kidneys produce cardiac shadows of different shapes, so that Martin believes some of them may be used as points in differential diagnosis. He utters a word of warning to the enthusiastic roentgenologist who would attempt cardiac diagnosis. Clean-cut cardiac lesions are not particularly common, and the combined lesions that may appear often tax the skill of the best internist with his various methods of investigation. Certain stages in various cardiac disorders produces shapes of the heart outline that are almost identical. If, instead of trying to make a diagnosis, the roentgenologist sends the internist a description of the cardiac shadow and states whether or not it is enlarged and denotes the chambers or vessels which show enlargement, he is rendering a service that is based on sound scientific principles.

**Roentgen-Ray Examinations of Gastro-Intestinal Tract.**—It is interesting to note that 33 per cent. of duodenal ulcer cases studied by Lafferty were accompanied by a patulous and chronic appendix. He believes that the occurrence is enough to suggest the plausibility of a theory as to the cause of duodenal ulcer, viz., that the chronic appendix reflexly causes a pylorospasm or duodenospasm, and that this is followed or accompanied by a hyperacidity, possibly causing or contributing to an erosion which gives a seat for the invading organism.

## Annals of Medical History, New York

June, 1921, **3**, No. 2

Montaigne and Medicine. J. S. Taylor, Washington, D. C.—p. 97.
Story of a Great Consultation; Jerome Cardan Goes to Edinburgh. C. L. Dana, New York.—p. 122.
Lines to a Skeleton. A. J. Vardill.—p. 135.
Unrecognized Anglo-Saxon Medical Text. C. and D. Singer, Oxford, England.—p. 136.
First Scientific Work on Spectacles. C. A. Wood, Chicago.—p. 150.
Charles Caldwell, Biographic Sketch. W. S. Middleton, Madison, Wis.—p. 156.
Lafayette Houghton Bunnell, M. D., Discoverer of Yosemite. H. A. Kelly, Baltimore.—p. 179.

## Archives of Dermatology and Syphilology, Chicago

August, 1921, **4**, No. 2

Subacute Malignant Pemphigus with Extensive Bullae. J. E. Lane and R. A. Lambert, New Haven, Conn.—p. 141.
*Syphilis and Tuberculosis. L. Hollander and F. C. Narr, Pittsburgh.—p. 153.
*Synovial Lesions of Skin. G. M. MacKee and G. C. Andrews, New York.—p. 162.
*Stomatitis and Aplastic Anemia Due to Neo-Arsphenamin. J. E. Moore and A. Keidel, Baltimore.—p. 169.
*Influence of Arsenical Preparations on Cutaneous Tests. A. Strickler, Philadelphia.—p. 177.
*Experiences with Sodium Arsphenamin (Diarsenol) H. E. Michelson and D. M. Siperstein, Minneapolis.—p. 184.
Review of Literature and Discussion of Silver Arsphenamin. H. E. Michelson and D. M. Siperstein, Minneapolis.—p. 193.
Cream of a Year at Beirut. W. B. Adams, Beirut, Syria.—p. 207.
Roentgen-Ray Dermatitis and Radium Dermatitis: A Comparison. G. M. MacKee and G. C. Andrews, New York.—p. 213.
Remedies for Rhus Dermatitis. J. B. McNair, Washington, D. C.—p. 217.

**Simultaneous Syphilis and Tuberculosis.**—A case is presented by Hollander and Narr in which the patient showed gross syphilitic and tuberculous lesions. Available statistics of the coexistence of syphilis and tuberculosis are reviewed. The possible malignancy of tuberculosis in the cases described is attributed in part at least to iodid medication.

**Synovial Lesions of Skin.**—Two cases are reported by MacKee and Andrews. The first was of twenty years' duration. The lesion occurred in a man, 26 years of age, and was situated over the dorsal aspect of the distal interphalangeal articulation of the middle finger of the right hand. It consisted of a pea-sized, smooth, shiny, transluscent, rounded, cystic tumor with a thick wall; it was not painful; there were a few visible venules in its walls. On palpation the tumor was firm but not hard. There was a sense of fluctua-

tion. The second case was of five months' duration, and occurred in a woman 48 years of age. The lesion was situated over the dorsal surface of the distal interphalangeal joint of the right index finger. It was painless, globular, tense, semi-translucent, pearly in color and the size of a large pea. Pressure caused a hyperemic areola at its circumference and a pallor of its central portion. This was probably caused by the occlusion of the small vessels in the walls of the lesion. The walls were thick, tough, smooth, shiny and slightly telangiectatic. Fluctuation was present.

**Arsphenamin Stomatitis and Aplastic Anemia.**—Moore and Keidel present the history of a patient who developed a fatal aplastic anemia after neo-arsphenamin. The literature is reviewed, attention is drawn to the relation of this type of reaction to dermatitis exfoliativa following arsphenamin, and the practical application of early recognition of the characteristic blood changes in the prevention of these reactions is pointed out.

**Influence of Arsenic Preparations on Skin Tests.**—Strickler states that the repetition of a luetin test in nonsyphilitic patients is capable of producing positive luetin tests in about 21 per cent. of all subjects. The intravenous administration of arsphenamin apparently stimulates the production of a luetin test in nonsyphilitic patients, and in their series they were able to produce 53 per cent. positive luetin tests following this form of intravenous specific therapy. In Strickler's experience the intravenous administration of cacodylate of sodium acts in the same manner as arsphenamin, only more feebly. The repetition of the tuberculin (von Pirquet) test may produce a positive finding, but very infrequently, occurring only once in a series of fourteen subjects. The intravenous administration of arsphenamin is capable of producing a positive tuberculin (von Pirquet) test, previously negative. This occurred in three instances in a series of ten patients. The anaphylactic food test made by either the endermic or scratch method does not seem to be influenced by the intravenous administration of either arsphenamin or cacodylate of sodium.

**Value of Sodium Arsphenamin.**—Michelson and Siperstein believe that the therapeutic efficiency of sodium arsphenamin is apparently equal to that of the other arsphenamins (clinically) and the effect on the Wassermann reaction is about on a par with that of the other arsphenamins.

## Archives of Neurology and Psychiatry, Chicago

August, 1921, **6**, No. 2

*Anatomic and Physiologic Studies of Eighth Nerve. E. Sachs and B. Y. Alvis, St. Louis.—p. 119.
*Cortical Olfactory Center. S. Uyematsu, Hathorne, Mass.—p. 146.
Case of Friedreich's Ataxia. J. H. Lloyd and H. S. Newcomer, Philadelphia.
*Comparative Results of Colloidal Mastic and Colloidal Gold Tests. A. Keidel and J. E. Moore, Baltimore.—p. 163.
*Diagnostic Criteria in Epidemic Encephalitis and Encephalomyelitis. L. F. Barker, Baltimore.—p. 173.
Physical Findings in Psychoneuroses. E. A. Strecker, Philadelphia.—p. 197.

**Anatomy of Eighth Nerve.**—In their study of the eighth nerve, Sachs and Alvis failed to find fibers running directly from the semicircular canals to the nuclei of the vestibular nerve. The fibers running from Deiters' nucleus anteriorly in the posterior longitudinal bundle are few in number and stop before they get to the third and fourth nuclei so that it is doubtful whether there is any connection between Deiters' nucleus and the other nuclei. This is the oculovestibular tract spoken of by Wilson and Pike. No fibers were found passing from Deiters' nucleus to the lateral lobes of the cerebellum where the centers Bárány has described lie. All anatomic evidence to support Bárány's contention as to the connections between Deiters' nucleus and the cerebellum is lacking. Fibers from Deiters' nucleus end in the posterior corpus quadrigeminum of the opposite side, but no neuron goes directly to the external geniculate. All fibers of the vestibular nerve end in one of the three vestibular nuclei or in the nucleus tecti of the vermis. Circus movements, rolling over and over, ataxia, swinging of the head, attitude of the head, hitherto described as due to a lesion of the eighth nerve or destruction of the semicircular canals, are due to injuries to the cerebellar nuclei or middle peduncle. The so-called cerebellar attitude of the head is due to involvement of the middle peduncle. Nystagmus and deviation of the eye downward and outward are the only constant symptoms observed after pure lesions of either the semicircular canals or eighth nerve. As the vestibular fibers lie so near the floor of the fourth ventricle, the symptoms described by Bárány as due to isolated lesions in the pons may be produced by, and probably usually are due to, the internal hydrocephalus which is a common accompaniment of posterior fossa lesions.

**Unilateral Involvement of Olfactory Lobe.**—Two patients presenting unilateral involvement of the olfactory lobe, one of congenital absence, the other of softening due to arteriosclerosis are reported by Uyematsu. Both had a lesion in the same area of the homolateral lobus pyriformis, the lesion being reasonably regarded as a secondary degeneration following the primary involvement of the peripheral olfactory center. In both cases, Uyematsu found a well marked degeneration of the anterior part of the lobus pyriformis. The first case was, however, that of an epileptic subject, and therefore the changes might be of an epileptic nature and not of a secondary degeneration. The second case was undoubtedly that of an arteriosclerotic brain disease, but the changes in the lobus pyriformis were different than in other parts, indicating their secondary nature. Considering these two cases, Uyematsu believes it is not unreasonable to conclude that the degeneration of the lobus pyriformis in the first case was also secondary. From the study of these two cases, and also from data presented by various observers, he is inclined to believe that the lobus pyriformis must be the chief olfactory center in the human brain. The cornu ammonis and the rest of the limbic lobe showed little evidence of degeneration.

**Comparison of Colloidal Tests.**—The results obtained show that there is a fairly close parallelism between the colloidal gold and the colloidal mastic tests; and that when agreement is lacking, the mastic test seems to detect abnormalities more frequently than does the gold. This fact, and the simplicity of performance of the mastic test, lead Moore and Keidel to conclude that the test should be an indispensable part of the route of spinal fluid examinations.

**Symptoms in Epidemic Encephalitis.**—The occurrence in a patient of (*a*) pathologic drowsiness (lethargy), (*b*) cerebral nerve paralysis (especially ophthalmoplegia), (*c*) an acutely developing parkinsonian syndrome, (*d*) a cataleptic or a catatonic state, (*e*) myoclonia, (*f*) chorea, (*g*) pupillary disturbances, (*h*) violent neuralgia, (*i*) a poliomyelitic syndrome, (*j*) a peculiar delirium, (*k*) a psychotic state or (*l*) signs of meningeal irritation in times when encephalitis is epidemic, Barker says, should make one think of the possible existence of epidemic encephalitis.

## Archives of Ophthalmology, New York

July, 1921, **1**, No. 4

Phacerisis. I. Barraquer, Barcelona, Spain.—p. 307.
Glaucoma and Nasal (Sphenophalatine Meckel's) Ganglion. M. H. Post, St. Louis.—p. 317.
Mercury Tonometer. M. Cohen, New York.—p. 326.
Surgical Treatment of Epithelioma of Cornea. L. M. Francis, Buffalo.—p. 331.
Corneal Suture in Cataract Extraction. E. C. Ellett, Memphis, Tenn.—p. 341.
Congenital Atresia of Puncta Lacrimalia of One Side. H. Gradle, Chicago.—p. 349.

## Canadian Medical Association Journal, Toronto

July, 1921, **11**, No. 7

Etiology of Epidemic Influenza. H. B. Maitland and G. C. Cameron.—p. 485.
Cardiac Irregularities. R. A. Jamieson.—p. 498.
Epidermophyton Infection. D. K. Smith.—p. 502.
Use of Living Sutures in Operative Surgery. W. E. Gallie and A. B. LeMesurier.—p. 504.

## Colorado Medicine, Denver

July, 1921, **18**, No. 7

Faith Healers; with Special Reference to Aimee Semple McPherson. C. S. Bluemel, Denver.—p. 143.
*Arthritis—Sacro-Iliac and Lumbosacral; Usual Types Due to Overstrain. G. W. Miel, Denver.—p. 146.
*Sudden Death Following Artificial Pneumothorax; Report of Case with Necropsy. C. O. Giese and L. A. Conway.—p. 148.

**Arthritis Due to Overstrain.**—In the treatment of arthritis at the lumbosacral articulation, due to overstrain, in the passive or later stages, the considerations are much the same as in the sacroiliac condition, or in these combined, but Miel says a back-supporting device is more essential and this should extend higher, and endeavor be made to keep the body fully erect—"stressed" by Goldthwait—so lessening irritation at this joint. To support the back, Miel resorts to two devices. He makes a sufficient back pad, five by eight inches in size, of two pieces of firm pasteboard, including between them a piece of light and flexible rubber composition splint board, held together by adhesive strips. It is then cottoned on one side and covered by bandage. It is then placed over the region requiring support, the patient erect, and held in place by two adhesive straps, the lower, longest, reaching the descending portion of the ilium. Miel covers and supports more fully a wide outing-flannel bandage of some five yards length, applied snugly and neatly as an ascending spiral, secured with adhesive plaster. A two-inch piece is applied at each side, extending two inches below, to have hold on hips, and also a strip in front and another at the back to fix the turns. This completes the support and it is used a week or more and discontinued to be supplanted, if found necessary, by one of the sacro-iliac supports available.

**Case of Sudden Death Following Artificial Pneumothorax.**—A tuberculous individual who had on several previous occasions undergone slight operations on the throat under local anesthesia, and puncture of whose chest had been done on six previous occasions with the introduction of air on three of these occasions, developed alarming symptoms some minutes after the introduction of 200 c.c. of air at the site of previous punctures and immediately following a second puncture in an adjoining interspace without the introduction of air. At no time did the manometer record a positive pressure. The symptoms, marked and well defined, were undoubtedly cerebral. There was a probable injury to the lung at the second puncture, but none could be demonstrated. Death occurred twenty-one hours following the operation. The necropsy findings, either microscopic or macroscopic, were insufficient to explain the symptoms. Giese and Conway are inclined to attribute death to pleural reflex, rather than air embolism.

## Delaware State Medical Journal, Wilmington

April, May, June, 1921, **12**, No. 2

Some Errors in Diagnosis and Treatment of Heart Affections. A. Robin, Wilmington.—p. 4.

## Florida Medical Association Journal, St. Augustine and Jacksonville, Fla.

July, 1921, **8**, No. 1

Treatment of Asthma in Pulmonary Tuberculosis. A. F. Higgins, Tampa.—p. 1.

Diagnosis and Treatment of Pulmonary Tuberculosis. R. E. Stephens, Sanford.—p. 2.

## Iowa State Medical Society Journal, Des Moines

July 15, 1921, **11**, No. 7

Relation of Family Doctor to Specialist, General Public and Future of Medicine in Iowa. D. Macrae, Council Bluffs.—p. 228.

Symposium on Surgical Diagnosis. Part I: Case History. O. C. Morrison, Carroll.—p. 234.

Id. Part II: Physical Examination. J. C. Hancock, Dubuque.—p. 236.

Id. Part III: Laboratory Procedures. F. H. Lamb, Davenport.—p. 244.

Id. Part IV: Roentgen Ray Examination. T. A. Burcham, Des Moines.—p. 250.

Id. Part V: Summary; Final Correlation. C. S. James, Centerville.—p. 254.

Acidosis, Explanation of Condition. T. Byrnes, Atlantic.—p. 257.

## Journal of Experimental Medicine, Baltimore

August, 1921, **34**, No. 2

Periodicity in Eliminative Activity Shown by Organism. W. Ashby, Rochester, Minn.—p. 127.

*Study of Transfused Blood. Blood Destruction in Pernicious Anemia. W. Ashby, Rochester, Minn.—p. 147.

*Experimental Syphilis in Rabbit. Affections of Eyes. W. H. Brown and L. Pearce, New York.—p. 167.

Preservation of Stock Strains of Spirocheta Pallidum and one Demonstration of Infection in Rabbits. W. H. Brown and L. Pearce, New York.—p. 185.

*Experimental Rickets in Rats. Diet Producing Rickets in White Rats, and Its Prevention by Addition of an Inorganic Salt. H. C. Sherman and A. M. Pappenheimer, New York.—p. 189.

Studies on Pneumonic Exudate. Effect of Perservation, Temperature, Dialysis and Salt Concentration on Enzyme in Pneumonic Lung. F. T. Lord and R. N. Nye, Boston.—p. 199.

Studies on Pneumonic Exudate. Presence of Enzyme and Antienzyme in Pneumonic Lung. Local Ferment-Antiferment Balance. F. T. Lord and R. N. Nye, Boston.—p. 201.

Studies on Pneumonic Exudate. Presence in Pneumonic Exudate of a Large Amount of Specific Antigen. F. T. Lord and R. N. Nye, Boston.—p. 207.

Studies on Pneumonic Exudate. Presence in Pneumonic Lung of Soluble Substance Inhibiting Agglutination by Homologous Serum. F. T. Lord and R. N. Nye, Boston.—p. 211.

**Blood Destruction in Pernicious Anemia.**—Evidence is presented by Ashby to show that there is no hemolytic toxin producing the anemia in pernicious anemia. Partial evidence is presented to show that the periods of active blood destruction which are seen as the exception in pernicious anemia cases during a series of transfusions are due to the activity of the blood-destroying organs of the body rather than to the intrinsic weakness of the pernicious anemia blood corpuscle. It is questionable whether blood destruction is as important a factor in producing the anemia of pernicious anemia as it is at present usually assumed to be.

**Experimental Syphilis of Eye.**—Brown and Pearce found that a variety of affections might occur following scrotal or testicular inoculations of *Treponema pallidum*. Those observed included ciliary injection, conjunctivitis, keratitis, and iritis which might occur separately or in combination with one another, except that keratitis and iritis were always accompanied by a reaction in the ciliary vessels and usually by a conjunctivitis. Several forms of each of these affections are described, and while some of them were regarded as presenting a very characteristic picture, it was recognized that the conditions present in other cases were not sufficiently distinctive to permit of a clinical diagnosis. With a few exceptions, however, the pathology of the lesions was sufficient to identify them as processes of a syphilitic nature. It was also found that this group of lesions usually arose from a common focus of infection which was located in the episcleral tissue immediately surrounding the cornea. From this point, the infection tended to spread to the conjunctiva and the cornea, or toward the canal of Schlemm and the spaces of Fontana and thence to the ciliary body, the iris, and choroid. The localization of the lesion and the mode of extension were held to be responsible for the combination of manifestations usually observed. From an analysis of the circumstances under which affections of the eyes occurred, it was found that the great majority of them occupied a definite position in the scheme of tissue reactions, being the only generalized lesions developed or the last type of lesion to appear. These facts, together with the unusual frequency of relapse in these affections, were believed to indicate that a low degree of protection was conferred upon these tissues by reactions taking place elsewhere and that the protection afforded by the local reaction was of a feeble character. This deduction was in part confirmed by the fact that it was found possible to increase or decrease the incidence of eye lesions by the use of experimental means which varied the scheme of reaction in animals inoculated with a given strain of *Treponema pallidum*.

**Producing Rickets by Diet.**—A simple diet is presented by Sherman and Pappenheimer which regularly induced rickets in young rats. The substitution of 0.4 per cent. secondary potassium phosphate for a small part of calcium lactate in this diet completely inhibited the development of rickets. Quantitative determinations of calcium in the bodies of parallel rats showed a marked increase of calcium content in the rats receiving the added phosphate over those which developed rickets. While it is thus shown by roentgen rays and by histologic examinations and by quantitative chemical analysis that added potassium phosphate increased the assimilation and normal deposition of calcium, it may be the quantitative relationship between the inorganic ions rather than actual deficiency of any one of them which was here the determining factor in the cause or prevention of rickets. These experiments do not exclude the possibility of other causes of rickets than those discussed.

## Journal of Parasitology, Urbana

June, 1921, 7, No. 4

Cytamoeba Bacterifera in Red Blood Cells of Frog. R. W. Hegner, Baltimore.—p. 157.
Two New Monistomes from Asia. E. C. Harrah.—p. 162.
Protozoa Parasitic in Fresh-Water Fishes of New York. R. Kudo.—p. 166.
Gregarines. M. W. Kamm.—p. 175.
Occurrence of Moniliformis Sp. in Rats in Texas. A. C. Chandler, Rice Institute.—p. 178.
Case of Urethral Myiasis. N. Leon, Jassy, Roumania.—p. 184.

## New York Medical Journal

July 20, 1921, 114, No. 2

Modern Commentaries on Hippocrates; Humoral Theory and Application. J. Wright, Pleasantville.—p. 77.
Lung Mapping by Injection of Bismuth Mixtures in Living. H. L. Lynah, New York.—p. 82.
Proofs of Constitutional Nature of Cancer. L. D. Bulkley, New York.—p. 85.
Neuralgias of Superior and Inferior Maxillary Branches of Fifth Nerve Caused by Dental Pulp Nodules. N. P. Norman, New York, and H. M. Johnston, Berkeley, Calif.—p. 88.
Influence of Prostate on Health of Man Past Middle Life. H. G. Bugbee, New York.—p. 92.
Urologic Life Extension. T. W. Williams, Milwaukee.—p. 95.
Treating Syphilis. L. L. Michel and H. Goodman, New York.—p. 102.
Schellberg Treatment for Chronic Colonic Infections. W. H. Galland, Croton-on-the-Hudson.—p. 106.
Coordination or Reestablishment Clinic in Hospitals and Dispensaries. J. M. Taylor, Philadelphia.—p. 110.
*Unusual Hypophysial Syndrome. E. D. Friedman, New York.—p. 113.
Etiology and Elimination of Tuberculosis. G. L. Curtis, New York.—p. 114.

**Unusual Hypophysial Syndrome.**—The chief complaints in Friedman's case, that of a man, aged 19, were dwarfism and obesity, of nine years' duration, hypertension, recurrent pains in the region of the spine for six months. Nine years ago the patient began to grow stout. He gained much weight in two months. Since then there had been very little growth in height. His abdomen became pendulous, his fingers stubby, feet remained small, and face became ruddy. Six months ago shooting pains developed in the region of the spine and chest. About one and a half months ago a pain developed in the right upper quadrant of the abdomen. This seemed to shift with change in position, and lasted about two weeks. He had shortness of breath and palpitation of the heart after exertion. His speech became somewhat hesitant. He had some impairment of memory. There was tremor after exertion. He had dimness of vision for the last two months, and occasional headaches. Nocturia was present, but no polydipsia. The mammae were well developed and the fat distribution was of the feminine type. There was an overgrowth of hair at the bridge of the nose, and the body was covered with fine lanugo hairs. The genitals were small. The fingers were stubby. The knee jerks were diminished. The skin showed ringworm in the axilla and pubis, erythema and telangiectasis of the face and striae distensae on the abdomen and thighs. Roentgen-ray examination of the skull showed undeveloped sinuses, the left being opaque. The sella was normal. Posterior clinoids as well as the bones of the body of spenoid appeared markedly atrophic and thin. Entrance to the sella was narrow. There was a dense shadow in the middle fossa.

## Surgery, Gynecology and Obstetrics, Chicago

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*Operation for Removal of Pineal Tumors. W. E. Dandy, Baltimore.—p. 113.
*Jejunal Ulcer. E. S. Judd, Rochester, Minn.—p. 120.
*Clinical Solution of Salt Solution in Conditions of Increased Intracranial Tension. F. E. B. Foley, St. Paul.—p. 126.
*Early Squamous Cell Carcinoma of Cervix. T. S. Cullen, Baltimore.—p. 137.
Rare Tumors of Cervix of Uterus of Inflammatory Origin; Condyloma and Granuloma. L. R. Wharton, Baltimore.—p. 145.
Roentgen Ray After Inflation of Pelvic Cavity with Carbon Dioxid Gas as an Aid to Obstetric and Gynecologic Diagnosis. R. Peterson, Ann Arbor, Mich.—p. 154.
Radium in Carcinoma of Uterus. W. Kohlmann, New Orleans.—p. 158.
Histologic Changes Incident to Radium and Roentgen-Ray Treatment of Uterine Carcinoma. O. Frankl and L. Amreich, Vienna.—p. 162.
Removal of Ventral Tumors of Sacrum by Posterior Route. H. E. Pearse, Kansas City, Mo.—p. 164.
*Study of Orgasm Associated with Transplantable Carcinoma of White Mouse. J. W. Nuzum, Chicago.—p. 167.
*Incidence of Carcinoma in Gastro-Intestinal Diverticulosis. R. R. Mellon, N. W. Soble, S. C. Davidson and W. F. Fowler, Rochester, N. Y.—p. 177.
Ranula of Branchial Origin. Louis Carp, New York.—p. 182.
*Control of Chronic Pain. F. Dyas, Chicago.—p. 184.
*Application of Silver Foil as Preventive of Peritoneal Adhesions. A. J. Puls, Milwaukee.—p. 186.
Hadra-Martin-Rawls Operation for Cystocele. T. J. Doederlein, Chicago.—p. 190.

**Removal of Pineal Gland Tumors.**—The operation described by Dandy is designed to remove the tumor directly. The approach is made possible by a very large parieto-occipital bone flap, the mesial margin of which extends to the superior longitudinal sinus. The dura is then opened and reflected over the inferior longitudinal sinus. In doing so, the cerebral veins which bridge the subdural space between the brain and the longitudinal sinus are gradually elevated, doubly ligated with fine silk ligatures, and divided. It is well, if possible, to avoid ligature of the rolandic vein for a transient hemiplegia will follow. Usually, however, it is necessary to ligate all the veins posterior to the rolandic vein. After division of the cerebral veins the entire posterior of the cerebral hemisphere can be retracted and the fal exposed. The inferior longitudinal sinus is quickly passed and the corpus callosum brought into view as the brain is still further retracted. There is no evidence of an underlying tumor. The posterior half of the corpus callosum is then carefully incised in the midline for a distance of 3 or 4 c. and the hemispheres still further retracted. The tumor will then be brought into full view. Under the fornix of the corpus callosum the vena Galena magna will always be brought into full view at its entrance into the sinus rectus. In one of the cases reported, the tumor lay anterior to the large vein of Galen and between it and the corpus callosum. In the other case about one-half centimeter of the great vein of Galen was free between the upper margin of the tumor and the beginning of the sinus rectus, an amount sufficient to permit double ligation and division of the vein between the ligatures. In the first case the tumor tubercle stripped readily from the vein and no bleeding resulted from the dissection. After the tumor was extirpated the great vein of Galen was seen as a tortuous trunk which when straightened would probably measure 4 centimeters in length; the third ventricle was not opened during the enucleation of the tumor. The bed from which the tumor was removed was the roof of the third ventricle. In the second case the tumor was so large that an adequate exposure was obtained only by dividing the falx cerebri. During the removal of this tumor the third ventricle was opened and the tumor extended so deeply that the operator's finger reached the posterior clinoid process of the sella turcica. A great deal of room is afforded by the release of fluid from the lateral ventricle by a puncture early in the operation, thus allowing the reduced bulk of brain to be easily retracted from the operative field.

**Jejunal Ulcer.**—Judd analyzes 101 cases of jejunal ulcer following gastro-enterostomy. In ninety-three cases ulcers were at the stoma; below the stoma in eight cases; the foreign material was found at secondary operation in twenty-six cases. Of fifty-five cases of primary operation done at the Mayo Clinic, foreign material was found at secondary operation in nine cases (16.25 per cent.). Of forty-six cases of primary operation done elsewhere, foreign material was found at secondary operation in seventeen cases (37.77 per cent.).

**Injection of Salt Solution in Intracranial Tension.**—In the human subject Foley shows that intravenous injection of hypertonic salt solution or the ingestion of salt produces a fall of cerebrospinal fluid pressure and a diminution of brain bulk. In conditions of pathologically increased tension the response is conditioned by the details of the pathologic alterations. The determining factors appear to be the size of the lesion which increases brain bulk and the amount of fluid available for absorption. The induced fall of pressure is inversely proportionate to the former and directly proportionate to the latter. A distinction is made between increased intracranial fluid tension per se and increased intracranial tention which is due to enlargement of brain bulk. From observations of cases of obstructed and dilated ventricles an intraventricular absorption of fluid following salt ingestion seems to occur. Foley believes that the procedure has a definite field of clinical usefulness in cases exhibiting high grades of intracranial pressure. The most striking results

are to be obtained in those cases in which cerebrospinal fluid obstruction exists.

**Early Squamous Cell Carcinoma of Cervix.**—The tumor in Cullen's case was accidentally discovered when the body of the uterus was being curetted for hemorrhage caused by hyperplasia of the endometrium and by a small submucous myoma.

**Organism in White Mouse Carcinoma.**—An intensive study of a transplantable carcinoma of the white mouse known as the Crocker carcinoma No. 11, was made by Nuzum. This investigation has extended over a period of more than two years, involving several hundred cultivation experiments with cancer tissue in the special tissue ascitic fluid mediums. More than 1,200 white mice were inoculated with cultures and tumor tissue. Employing the special tissue ascitic fluid medium under partial anaerobic conditions a minute, filtrable, gram-positive micrococcus has been isolated quite constantly from emulsions or pieces of carcinoma tissue removed under sterile precautions. The minute coccal bodies present some difficult in isolation in the original cultures but transfers to subculture generations gradually effect a more rapid and luxuriant growth once the organism becomes adapted to artificial cultivation. It has been carried to the twelfth subculture generation under anaerobic conditions. The minute micro-organism has been seen in stained sections of early carcinoma produced by trocar inoculation of tissue grafts in the usual manner. It has been frequently demonstrated in contact smears of carcinoma cells stained by Gram's method. It has never been encountered in the many control tubes of culture medium incubated simultaneously with the cultures. Injection of pure cultures of the organism subcutaneously into the breast tissue of mice has frequently reproduced tumor nodules which grow progressively for periods of from ten to thirty days and slowly regress in the majority of cases. Microscopic sections of such tumor nodules removed at twenty-four hour periods reveal a mass of newly formed tissue cells rapidly dividing and supported by a newly formed stroma which becomes vascularized. A method has been found whereby pure cultures of the organism have reproduced new growths. Subcutaneous injections of anaerobic culture of the minute organism under these favorable experimental conditions, designed to exclude the probability of carrying over liver cancer cells, have in several isolated instances led to the production of tumors which grew steadily producing cachexia of the mouse. Histologic studies have shown that these tumors do not vary in structure from the original growth known as the Crocker carcinoma No. 11. Transplants from the tumor growths produced by injections of the organism have yielded similar growths in 80 per cent. of a series of inoculated mice. The organism has been readily recovered from these experimental tumors.

**Carcinoma in Gastro-Intestinal Diverticulosis.**—Gastro-intestinal diverticulosis is an important abdominal condition which does not have the recognition from the abdominal surgeon that it deserves. The gastric cases are the rarest. The one reported by Mellon was diagnosed preoperatively by means of the roentgen ray, and confirmed by pathologic examination. The conditions prevailing in these curious formations seem to facilitate the development of carcinoma, which fact makes their early recognition and removal a matter of first importance to the patient. Ulceration is not a necessary condition for the development of carcinoma. Whether carcinoma develops or not, diverticula are always a source of danger to the patient, owing to the sequels of infection and obstruction.

**Control of Chronic Pain.**—In cases of chronic pains in the arm Dyas recommends that the brachial plexus be exposed by incision under local anesthesia when permanent analgesia is required for the relief of pain due to malignancy. With the plexus exposed either alcohol injection of the cords or section should be done.

**Silver Foil to Prevent Abdominal Adhesions.**—Puls proposes the application of silver foil to the amputated stumps of the infected fallopian tubes. It may possibly inhibit the vitality of latent germs embedded in the tissues of the severed adhesions, but it acts especially as a protection against subsequent adhesions of the denuded peritoneum which cannot be closed by suture.

## Virginia Medical Monthly, Richmond

July, 1921, 48, No. 4

*Ocular Interpretations of Disorders of Pituitary Body and Their Non-surgical Treatment. G. E. De Schweinitz, Philadelphia.—p. 179.
*Surgical Treatment of Certain Types of Dyspepsia. S. McGuire, Richmond.—p. 184.
Study of Consecutive Series of Nephrectomies. J. S. Horsley, Richmond.—p. 187.
Acute Obstructive Laryngitis in Children. G. J. Tompkins, Lynchburg.—p. 193.
Elephantiasis and Kondoleon Operation. T. M. Green, Wilmington, N. C.—p. 196.
*Migrainous and Pituitary Headaches Contrasted. J. A. Hodges, Richmond.—p. 203.
Ureteral Stricture. R. L. Rhodes, Augusta, Ga.—p. 205.
Radium in Treatment of Cancer of Uterus. J. J. Mundell, Washington, D. C.—p. 208.
Pyorrhea Alveolaris as Etiologic Factor in Nonrelief of Symptoms After Surgical Operation. G. H. Bunch, Columbia, S. C.—p. 210.
Electrocardiograph in Diagnosis. D. Vanderhoof.—p. 212.
*Circumcision Prevents Syphilis. A. Irvine, McDowell, W. Va.—p. 214.

**Pituitary Disorders Treated Nonsurgically.**—De Schweinitz points out that in stages of glandular insufficiency it appears to be a fact that the effectiveness of organotherapy is probably enhanced by simultaneous administration of mercury (preferably by inunctions), and the gland extracts, even though the presence of syphilis is not demonstrable by the usual methods. It is probable that a combination of thyroid and pituitary gland extracts is more efficient than either of the extracts alone, and that this combination, associated with mercury is more effective than is an extract of one gland, even though given in conjunction with unguentum hydrargyrum. The value of radium in the treatment of pituitary body lesions has unquestionably been demonstrated in cases in which it has been applied both primarily and after operative proceedures.

**Surgical Treatment of Dyspepsia.**—Every one suffers at times from indigestion due to imprudence in eating, but no one has constant, persistent, dyspepsia, lasting for months or years, unless it is due to some organic disease. A case of indigestion, McGuire says, ought not to be subjected to surgery until it has been carefully and properly treated by medical measures without success, but every patient who fails to secure relief in a reasonable time should be examined to see if there is not some indication for operative intervention.

**Migrainous and Pituitary Headaches Contrasted.**—Hodges asserts that headache is the result, physiologic in part and in part pathologic, of enlargement of the pituitary gland, situated, as it is, in bony and unyielding walls which do not allow symmetrical development, and, consequently, pressure symptoms are produced. Migrainous headaches occur paroxysmally in neurotic individuals, often with a history of direct heredity, and at any time of life, and are congestive in type, and characterized by periodic attacks of pain, continuing for variable periods in the course of the fifth nerve, and often associated with nausea or vomiting and various vasomotor disturbances, which are intractable to treatment. Pituitary headaches are localized and persistent in type, and occur in patients showing clinical dyspituitary disorders and, because of dysfunction of the pituitary gland in these patients, there occur pressure symptoms of headache, vertigo and vomiting, which are usually relieved by continuous and proper glandular feeding. The prognosis in migrainous headaches is uncertain and discouraging and generally irresponsive to any treatment before a patient is 40 years of age. After approximately that age, there may be improvement or sometimes, spontaneous recovery, while in pituitary headache, the prognosis is favorable and satisfactory, if treated early by appropriate glandular extract.

**Circumcision Prevents Syphilis.**—Irvine states that national circumcision would prevent forty thousand deaths in the United States each year, and in a few years, would stamp out practically all acquired syphilis in men and women and inherited syphilis in infants. Nation-wide circumcision would do more good than all the mercury iodid and arsphenamin in the world, many times over. Prevention of the abrasion on the penis is the keystone to the arch in the prevention of syphilis, and the simple surgical operation of circumcision does this.

## U. S. Naval Medical Bulletin, Washington, D. C.

July, 1921, **15**, No. 3

Interesting Cases from the Surgical Service of the United States Naval Hospital, New Orleans, During 1920. W. J. Riddick and E. A. Stephens, M. C., U. S. N.—p. 507.
Hysteria in the Naval Service. W. A. Bloedorn, M. C., U. S. N.—p. 515.
Case of Hysterical Spastic Paralysis or Contracture. A. H. Ehrenclou, M. C., U. S. N.—p. 521.
Roentgen-Ray Procedure and Technique. I. E. Jacobs, M. C., U. S. N., and C. B. Worster, U. S. N.—p. 524.
Interpretation of Abdominal Muscular Rigidity. L. W. Johnson, M. C., U. S. N.—p. 529.
Case of Echinococcus Cyst. C. S. Norburn, M. C., U. S. N.—p. 530.
Surgical Instruments Which Will Withstand the Action of Corrosives. G. C. Thomas, U. S. N.—p. 532.
Aseptic Technic for Canal Instruments. H. E. Harvey, U. S. N.—p. 533.
Trauma Caused by a Fall from a Great Height. H. H. Lane, U. S. N.—p. 535.
Administration of Neosalvarsan. J. B. Bostick, U. S. N.—p. 536.
Diet Deficiency in Vincent's Angina. C. H. Morris, U. S. N.—p. 540.
Vincent's Infection of Gums and Buccal Membranes. J. B. Goodall, U. S. N.—p. 542.
Penetrating Wound of Pelvis. F. B. Gardner, U. S. N.—p. 544.
Traumatic Rupture of Spleen; Removal. F. H. Bowman and F. M. Foote, U. S. N.—p. 545.
Temporary Wrist Drop, Operation and Prompt Recovery. J. I. Yohannan, U. S. N.—p. 547.
Plastic Operation on Muscles of Shoulder. R. W. Auerbach, U. S. N. p. 548.
Simple Operation for Trichiasis. H. S. Cragin, U. S. N., R. F.—p. 551.
Case of Adenocarcinoma. M. Boland, U. S. N.—p. 552.
Chancroidal Infections. W. F. Pearce, U. S. N.—p. 554.
Case of Syphilis Innocently Acquired with Primary Lesion on Palm of Left Hand. J. W. Jones, U. S. N.—p. 556.
Case of Carcinoma of Testicle. W. J. Corcoran, U. S. N.—p. 557.
Removal of Unusually Large Abdominal Tumor. E. L. Jones, U. S. N.—p. 558.
Retrospect of Naval and Military Medicine. J. S. Taylor, U. S. N.—p. 561.

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## FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Medical Journal, London

July 23, 1921, **2**, No. 3160

Medical Profession: A Horizon of Hope. D. Drummond.—p. 103.
Industrial Hygiene: Its Rise, Progress, and Opportunities. T. Oliver.—p. 108.
Superfoetation. R. E. Ingram-Johnson.—p. 116.

July 30, 1921, **2**, No. 3161

Evolutionary Wounds. A. Keith.—p. 137.
*Stillbirth: Its Causes, Pathology, and Prevention. F. J. Browne.—p. 140.
Psychologist in Public Life. H. B. Brackenbury.—p. 145.

**Prevention of Stillbirths.**—The great fact that emerges from Browne's investigation is that a very large percentage of the stillbirths and neonatal deaths could have been avoided by adequate antenatal supervision. Browne suggests as an ideal, antenatal supervision and care of every unborn infant by the compulsory, or preferably by the voluntary, notification of the pregnancy of every expectant mother.

## Indian Journal of Medical Research, Calcutta

Special Indian Science Congress Number, 1920

Organization of Medical Research in India. J. W. Cornwall.—p. 1.
*Malaria Survey of Calcutta and Environs. M. O. T. Iyengar.—p. 8.
Maggot Trap: Means for Safe Disposal of Horse Manure and Similar Refuse. F. W. Cragg.—p. 18.
*Relapsing Fever in India, with Special Reference to Its Seasonal Prevalence. F. W. Cragg.—p. 22.
Distribution of Indian Species of Genius Xenopsylla, with Reference to Immunity of Certain Area from Plague Epidemics. F. W. Cragg.—p. 29.
Geographic Distribution of Freshwater Gastropod Molluscs of Indian Empire and Its Direct Bearing on That of Human Disease. N. Annandale—p. 35.
Influence of Deficient and Illbalanced Dietaries in Favoring the Development of Gastro-Intestinal Infections. R. McGarrison.—p. 38.
Filariasis. P. N. Das.—p. 44.
Variation in Results Obtained with Bacteriologic Sugars. G. Mackey.—p. 55.
Bleeding of Healthy Rabbits. A. G. McKendrick.—p. 58.
*Simple Method of Performing Widal Test. S. N. Goré.—p. 60.
*Injection of Lymph Subcutaneously as a Protection Against Smallpox. C. F. Fearnside.—p. 71.
Examination and Disinfection of Drinking Water. J. Morison.—p. 79.
Purification of Water by Filtration. J. Cunningham and T. N. D. Raghavachari.—p. 86.

**Malaria Survey of Calcutta.**—Iyengar conducted a mosquito survey of Calcutta and its environs during the past two years and this paper deals with the results, more especially from the point of view of sanitation and the prevention of disease.

**Relapsing Fever in India.**—The special feature of the disease seen in India, to which Cragg directs attention, is the seasonal prevalence in its relation to transmission by the louse. Cases studied by Cragg occurred during the summer so that the louse appears very unlikely to be the transmitting agent in the hot weather epidemics of relapsing fever.

**Modification of Widal Test.**—While Wright's technic requires considerable practice and fresh pipets every time before the test can be satisfactorily performed, in the modification described by Goré very little practice is required and the same tubes are used repeatedly.

**Subcutaneous Smallpox Inoculation.**—After touching the recipient's arm with tincture of iodin, the needle is inserted under the skin and a small amount of lanolinated vaccine is injected hypodermically. Four injections are made, a little lymph being injected each time, the skin being touched with tincture of iodin on withdrawal of the needle. The data given on the comparative value of the external and internal methods of vaccination favor the latter. To prove that the method is successful, Fearnside vaccinated two persons, who had been inoculated with the vaccine subcutaneously by the ordinary method of scarification and all were negative, which establishes the fact that it is protective.

January, 1921, **8**, No. 3

Experiment in Eradication of Plague Infection Carried Out in Poona and Adjacent Districts. J. C. G. Kunhardt and G. D. Chitre.—p. 409.
Further Experiments in Plague Prevention Carried Out at Poona. J. C. G. Kunhardt and G. D. Chitre.—p. 446.
*Detection of Indol in Bacterial Cultures. R. H. Malone and S. N. Goré, Bombay.—p. 490.
*Cotton Wool Plug Test for Indol. S. N. Goré, Bombay.—p. 505.
Malaria in Mesopotamia. S. R. Christophers and H. E. Shortt.—p. 508.
Incidence of Malaria Among Troops in Mesopotamia, 1916-1919. S. R. Christophers and H. E. Shortt.—p. 553.
Anti-Malaria Operations at Busra, 1916-1919. S. R. Christophers and H. E. Shortt.—p. 571.

**Detection of Indol.**—Neither the nitroso-indol nor the rosindol reaction was found by Malone and Goré to provide a specific test for indol, but the latter, in virtue of its great delicacy, is the reaction of choice for detecting indol in bacterial cultures. The method which combines delicacy and specificity, and best fulfils the conditions laid down for a routine test is that described under the heading "Goré's cotton-wool test."

**Goré's Indol Test.**—Goré's test consists in moistening the under surface of the cotton-wool plug of the culture tube with a few drops of Bohme's solution, and heating the tube for a few minutes. In the case of a positive result, a rose color appears on the under surface of the plug.

## Naval Medical Association Bulletin, Tokyo

March, 1921, No. 32

*Case of Fistula Connecting a Gall Duct with a Bronchial Tube. K. Shinkai.—p. 1.
Reliability of Herman and Perutz's Precipitating Reaction of Syphilis. M. Hirano.—p. 2.
Neutralization of Toxic Action of Corrosive Mercuric Chlorid on Small Animals. R. Watanabe.—p. 3.

June, 1921, No. 33

Roentgen-Ray Examination of Organs in Abdominal Cavity by Introducing Oxygen into Latter. M. Imayoshi.

**Biliary-Pulmonary Fistula.**—A patient, aged 51, who was suffering from cough died from heart failure. His expectoration had amounted to from 300 to 500 c.c. a day; was greenish yellow in color and had an offensive odor. At the necropsy multiple gummas were found in the liver, kidneys, and many other organs. A part of an intrahepatic gallduct was enormously dilated and its wall partly obstructed by many gallstones, a cave thus being formed in the liver. This cave communicated with a second cave formed behind the liver under the diaphragm, and containing a small amount of gall and several stones. A part of the right lung was adherent to the diaphragm, and a fistula ran through this adherent part, from the second cave to a bronchial tube. The cause of the formation of this fistula, it is suggested, might possibly be attributed to cholelithiasis or to a blow on the abdomen received two years previously.

## Lancet, London

June 4, 1921, 1, No. 23

Relation of Heart Disease and Pregnancy. J. Mackenzie.—p. 1163.
Surgery of Pituitary Gland. A. J. Walton.—p. 1168.
New General Anesthetic: Ethanesol. R. L. Mackenzie and C. L. Hewer. —p. 1173.
*Chaulmoogra Oil in Leprosy and Tuberculosis. L. Rogers.—p. 1178.
Case of Jaundice from Late Salvarsan Poisoning. J. Elliott.—p. 1180.
Case of Pulsating Empyema. J. Broadbent.—p. 1181.
Case of Webbing of Left Arm. J. S. Manson.—p. 1182.

**Chaulmoogra Oil in Leprosy and Tuberculosis.**—The successful treatment of leprosy by injections of soluble preparations of the fatty acids of chaulmoogra and other oils and its bearing on the tuberculosis problem are discussed by Rogers.

## Medical Journal of Australia, Sydney

July 2, 1921, 11, No. 1

Lectures on Medical Ethics. A. V. M. Anderson.—p. 1.
*Immunity in Children to Tuberculosis. P. de Luca.—p. 7.

**Immunity in Children to Tuberculosis.**—Observations and the clinical results in children during seven years, as well as the experimental work in animals, lead de Luca to the conviction that Besredka's recent opinion regarding immunity is true. To produce absolute active immunity in tuberculosis de Luca has employed in children crude cod liver oil or iodin compounds in large doses. These substances act as a stimulant and intensify the biliary secretion, which frequently produces erosion or desquamation of the intestinal mucous membrane and thus favors the absorption of the antigen. In these conditions the intestinal walls become a local source of antibody production. From this localized laboratory of antibody, of course, its distribution to the circulation probably takes place and the complete cure of the patient must await a sufficient concentration of these antibodies in the organism. The first active immunity for oral route against tuberculosis in children has been practiced in New South Wales by de Luca seven years ago. The first children vaccinated were his two daughters. From that date till today, in Australia and in Italy (during the war, 1915-1919), 119 children from 1 to 12 years of age have received tubercle vaccine as treatment and to establish absolute immunity. All children before the treatment have suffered from mild tuberculous infection: enlarged glands, asthma, sinusitis, synovitis, tubercular abscess, etc., and nearly all have recovered from the local lesion after three or four months' treatment and were protected against further infection. No children treated have become affected with phthisis or have died from tubercular disease; all the children were followed till January, 1920. De Luca concludes that active and absolute immunity can be established in tuberculous children by the oral route, if the intestinal mucosa has been prepared by the crude cod liver oil. He claims also that repeated administration per os of detoxicated culture of tubercle bacilli is productive of a much stronger immunity than subcutaneous or intravenous in inoculations and are less likely to produce bodily reactions.

## Medical Journal of South Africa, Johannesburg

May, 1921, 16, No. 10

Case of Heart-Block Due to Gumma. R. L. Girdwood.—p. 183.
Functions of a Sanitary Inspector in Modern Community. A. J. Orenstein.—p. 187.
Ether Representing Ethanesal. T. G. Hall.—p. 191.

## National Medical Journal of China, Shanghai

June, 1921, 7, No. 2

Diseases of Eye. T. M. Li.—p. 40.
*Bacteriologic Examination of Smears from One Thousand and Four Consecutive Eye Cases. P. T. Chih.—p. 52.
Diagnosis and Treatment of Diphtheria. E. Tso.—p. 55.

**Bacteriology of Eye.**—In the total number of 1,004 cases examined by Pa, organisms were found 497 times, including forty cases counted more than once on account of mixed infection. The Morax-Axenfeld bacillus was found, 166 times, or 33.4 per cent.; staphylococcus, ninety-seven times, or 19.3 per cent.; pneumococcus, ninety-five times, or 19 per cent.; Koch-Week's bacillus, sixty-six times, or 13 per cent.; xerosis bacillus, twenty-nine times, or about 6 per cent.; streptococcus, seven times, or about 1.4 per cent., and the gonococcus, nine times, or about 1.8 per cent.

## South African Medical Record, Cape Town

July 9, 1921, 19, No. 13

Stock-Taking. E. G. Dru Drury.—p. 244.
Proptosis Due to Suppuration of Maxillary Antrum. P. Jabkovitz.—p. 252.

## Tubercle, London

July, 1921, 2, No. 10

*Subcutaneous Tuberculin Test. N. Bardswell.—p. 433.
Hemoptysis Treated by Artificial Pneumothorax. T. Begtrup-Hansen. —p. 441.
*Fever and Temperatures in Pulmonary Tuberculosis. E. E. Prest.—p. 444.

**Subcutaneous Tuberculin Test.**—Failure to react to tuberculin, Bardswell says, does not exclude tuberculous disease. A negative response, however, would appear to indicate that tuberculous disease, if present, is quiescent and does not call for active treatment. When the general clinical picture of a patient strongly suggests pulmonary tuberculosis, a negative response should be ignored. A general or febrile reaction only gives no useful information: it has no diagnostic import. A focal reaction indicates the existence of a tuberculous lesion. This reaction is of much less significance from the point of view of diagnosis and treatment, than the presence of tubercle bacilli in the sputum. It is in patients in whom a positive diagnosis can be made with some confidence upon general clinical grounds that the focal reaction is most likely to be obtained. In practice, however, the test is indicated in few, if any, of these cases. For a focal reaction, should it occur, but confirms the diagnosis already made, while the absence of the reaction does not in any way discount a positive diagnosis. If, as should be the case, the subcutaneous test is applied only to those patients in whom, after full investigation, the diagnosis still remains uncertain, the most informative response of the inoculations, namely the focal reaction, is scarcely ever obtained. In short, it is in the cases in which assistance is most needed that the tuberculin test is least likely to give any indications. In Bardswell's opinion, the test is not a means whereby the existence or absence of tuberculous disease can be determined. Neither, when a tuberculous lesion is present, does the test give any information as to its activity. The test has disadvantages in that the general reaction so often produced gives rise to discomfort and unpleasant symptoms. Further, in unskilled hands, the test may do definite harm.

**Temperature in Pulmonary Tuberculosis.**—The most important point in treating pulmonary tuberculosis which tends to be autotoxic, Prest maintains, is to prevent the tissues from being seriously injured by too much toxin. This can usually be done by putting the patient to bed; this applies especially to early cases. If an effort is to be made to bring about a cure by a reaction produced either by exercise or the injection of tuberculin, then for good to be accomplished it must be comparatively transitory in duration; if otherwise, the patient will become indistinguishable from a patient suffering from acute disease and irrevocable damage will be done to the lung. It would appear that in some cases in which tuberculin has been given without proper control, a cure or the reverse has often been merely a matter of chance as to whether improvement were effected by any given dose before some serious calamity occurred. Chronic cases are always a difficulty and are, as a rule, due to neglect of rest in the early stages; they might be roughly defined as cases which have lost their sensitiveness to toxin. Rest in these cases is extremely beneficial, probably because it tends to restore a lost sensitiveness, but all kinds of methods of treatment may be tried, such as auto-inoculation by violent exercise or injections of tuberculin. The few brilliant results obtained by giving big doses in these cases are very little guide as to the correct method of giving tuberculin. In hilum or glandular tuberculosis in children, the necessity for complete rest or for a modified amount of exercise can be gaged from symptoms, perhaps, rather than from temperatures; if these patients gain weight, cease to sweat, cease to be tired and do not complain of headaches and generally improve, then a certain amount of exercise is indicated; though Prest has always found the ultimate prognosis much better when the patient has a normal temperature with a 36.5 C. morning temperature.

## Annales de Médecine, Paris

1921, 9, No. 6

*Acute Nephritis. K. Petrén.—p. 393.
*Lesions in the Air Passages of the Gassed. P. Menetrier and A. Coyon.—p. 409.
*Experimental Pneumonia. G. Roussy and R. Leroux.—p. 419.
*Colloidal Gold in General Paresis. J. Haguenau.—p. 430.
*Incubation of Tuberculosis. R. Debré, J. Paraf and L. Dautrebande.—pp. 443 and 454.

**Acute Nephritis.**—Petrén found edema, plus erythrocytes in the urine, in 30 of his last 47 cases of acute nephritis. In his series before 1914, the albumin disappeared completely from the urine in 47 per cent.; between 1914 and 1917, in 70 per cent. and in 94 per cent. since then. The albumin was more likly to disappear when the proportion was small. The prognosis also seemed to be better when the patients entered the hospital at an earlier stage of the disease. The blood pressure was as low as 130 in only 4 of the total cases of the last series; in 7 the pressure ranged from 180 to 215. In all the cases the tension returned to normal as recovery progressed, and the uremia also subsided apparently without leaving a trace. In some cases the uremic headache subsided after lumbar puncture. He keeps the patients in bed, and allows for four or five days only a mixture of equal parts of milk and cream. Then he adds unsalted butter, potatoes and rice, thus avoiding foods rich in nucleins. After several days of this, he adds bread and cereals and a few days later allows cooked fruits, legumes and, finally, eggs. He comments on the psychologic influence of progressively augmenting the diet in this way.

**Pathologic Anatomy of the Air Passages in the Gassed.**—Menetrier and Coyon describe the necropsy findings in eight soldiers dying within two weeks after exposure to yperite. Out of 2,947 gassed in the month ending Nov. 9, 1918, and treated in their hospital, forty-nine died. An obliterating bronchiolitis entailed slow progressive asphyxia. Symptoms of septicemia became superposed on the asphyxia, the same as with other war wounds not protected against infection.

**Bronchopneumonia.**—Roussy and Leroux here present the results of experimental research to confirm their recent assertion that thrombosis is often responsible for bronchopneumonia in the elderly. With a mechanical plus infectious factor, they induced bronchopneumonia regularly in the first three dogs they experimented on.

**Colloidal Gold Reaction in Spinal Fluid.**—Haguenau extols this test as simple and convenient, differentiating general paresis from other forms of neurosyphilis.

**Serial Tuberculin Skin Tests.**—This is a study of the period preceding the development of allergy after infection with tuberculosis. It seems evident that the local lesion resulting from the infection and the general antibodies which induce the reaction to tuberculin tests develop simultaneously. There was always exact coincidence between the appearance of the local lesion and the first positive response to the skin tuberculin test. The experiences with infants related show that this silent period of incubation varies in length with the intensity of the infection.

## Bulletins de la Société Médicale des Hôpitaux, Paris

July 8, 1921, 45, No. 24

Vasodilating Action of Garlic. M. Loeper and M. Debray.—p. 1032.
Imported Kala-Azar at Paris. Klippel and Monier-Vinard.—p. 1037.
Idem. P. Carnot and E. Libert.—p. 1039.
*Phthiriasis with Melanodermia. L. Tixier and H. Duval.—p. 1046.
*Cure of Familial Hemophilia. P. Emile-Weil.—p. 1048.
*Protracted Epidemic Encephalitis. Rathery and Cambessédès.—p. 1051.
*Abortive Epidemic Encephalitis. P. Marie and G. Lévy.—p. 1054.
*Unilateral Melanodermia. R. A. Gutmann and J. Dalsace.—p. 1062.
*Experimental Gangrene. Milian and Périn.—p. 1065.
*Kidney Chromoscope Gage. C. Lian and G. Siguret.—p. 1067.
Jaundice as Sign of Anaphylaxis. C. Flandin and P. Vallery-Radot.—p. 1072.
*Senile Arc in the Cornea in Tuberculosis. Lortat-Jacob and Turpin.—p. 1075.
*Anaphylaxis to Eggs. P. Pagniez, P. Vallery-Radot and J. Haguenau.—p. 1077.
Tuberculin Reaction During Menstruation in the Tuberculous. L. Bernard, M. Salomon and Joannon.—p. 1088.
Coprology of the Tuberculous. P. Le Noir and R. Goiffon.—p. 1091.

**Melanodermia with Phthiriasis.**—The intense pigmentation in the woman of 82 affected only the covered portions of the body, and it persisted after delousing. There were no symptoms of suprarenal insufficiency.

**Cure of Familial Hemophilia.**—Weil relates that the child of 7, a pronounced bleeder, was given an injection of 20 c.c. of normal horse serum every second month, to a total of 15 injections, and the tendency to hemorrhage seemed to be arrested. There has been no return of hemorrhage during the seven years to date. This is the more remarkable as the boy belongs to one of the classic bleeder families that have been written up in medical annals, the hemophilia traced back to the eighteenth century. Two theses were devoted to this family in 1841 and 1885. Weil has now a record of eight cases of familial hemophilia given long series of serum injections in this way, and they never failed. He always supposed the action was purely palliative, but the permanent cure in the case here described proves that familial hemophilia is curable, and we now have a prospect of blocking its transmission to later generations.

**Epidemic Encephalitis.**—In the case described the epidemic encephalitis developed in two phases separated by a long intermission during which the woman conceived and bore a healthy child. The second and still persisting phase is marked by sialorrhea so intense that the woman can be traced by the track of saliva she leaves. The parkinsonian and other symptoms indicate severe disturbance in the medulla oblongata. Marie and Lévy report four cases of epidemic encephalitis in which the parkinsonian symptoms were restricted to one arm. Souques has witnessed hemiplegia develop from this shaking palsy of one arm. Sicard mentioned that he had never seen a case of shaking palsy recover when the thumb and forefinger presented the "cigarette-rolling" sign. As long as this *signe de l'émiettement* is absent, improvement may be hoped for.

**Unilateral Melanodermia.**—The pigmentation of the chest and abdomen coincided with changes in the sympathetic system, as evidenced by vascular and secretory phenomena.

**Experimental Gangrene.**—Three cases are described of fulminating gangrene of the male external genitals. In one case fluid from the ulceration was inoculated in laboratory animals, and the rabbits developed extensive gangrene; the other animals proved refractory.

**Colorimeter for Kidney Tests.**—Lian and Siguret mount in a revolving stand the test tubes containing the different dilutions of phenolphthalein for the colorimeter test. The principle of this nephrometric chromoscope can be applied to estimate the albumin, etc., in body fluids. They urge more general use of the Rowntree and Geraghty technic.

**The Senile Arc in the Tuberculous.**—Lortat-Jacob prefers to call it the corneal circle, as it is not a sign of old age but only of a general tendency to sclerosis. In thirty tuberculous cases studied, some of the patients were from 34 to 45 years old. In all, the tuberculosis was of the chronic fibrous type, a relatively favorable form, and hence the discovery of the senile arc is a good sign, like Landouzy's camptodactylia. The latter is most common in women while the senile arc occurs predominantly in men.

**Anaphylaxis to Eggs.**—The youth of 17 developed urticaria, asthma, and sometimes an intense attack resembling the phenomena of induced anaphylaxis in animals. From the age of 5 he has displayed this idiosyncrasy, colic and diarrhea coming on half an hour after eating soft white of egg, or pruritus and urticaria in from two to ten minutes. The yolk of egg and hard cooked whites caused no disturbance. The case was studied in detail for nearly a year. It confirmed anew that urticaria and asthma are superposable in this respect. Attempts to desensitize this patient failed to yield conclusive results, although the most varied methods were given thorough tests. After long showing marked improvement, a particularly violent recurrence of asthma discouraged the family and put an end to the tests.

## Monographies Oto-Rhino-Laryng. Internat., Paris

1921, No. 2

*Pathology of Nasopharyngeal Cavity. A. Poppi (Bologna).—p. 117.

**Relations Between Adenoids and the Pituitary.**—The 128 pages of this monograph with its 52 illustrations discuss the embryology, anatomy, physiology and pathology of the nasopharynx and its interrelations with organs in the vicinity,

especially the pituitary and thymus. Poppi accepts as demonstrated that pathologic conditions in the nasopharynx are the cause of abnormal conditions in the circulation of the pituitary, and, by reflex action, may modify the circulation in remote organs, upsetting the balance in the endocrine system. Removal of the adenoid vegetations breaks this abnormal chain, but hitherto there has been little if any attempt to link up adenoids with remote internal disease and clinical surgery. The monograph is in French, with twelve page summaries in English, Spanish and Italian. The first monograph in the series was by H. Tilley, on frontal and ethmoidal sinusitis.

## Paris Médical

July 9, 1921, **11**, No. 28

*Medicosocial and Medicolegal Matters. P. Cornet and A. Peytel.—p. 33.
*Occupational Diseases. V. Balthazard.—p. 38.
*Social Insurance. P. Boudin.—p. 42.
The Hospitals of France. H. Reynès.—p. 43.
Provisions for Medical Care of Ex-Soldiers. G. Mauncury.—p. 45
*Gage of Disability. Rieux.—p. 46.
*Fees for Treatment of Industrial Accidents. F. Decourt.—p. 49.
*Medical Secrecy in the Courts. E. H. Perreau.—p. 53.

**Medicosocial and Medicolegal Questions of the Day.**—Cornet and Peytel emphasize that the medicosocial tasks of the physician are growing constantly vaster and more complex. The general practitioners are often the ones whose advice is most valuable, as they speak from practical experience, not mere theories. They recall further that physicians must not forget that they have to aid in the application of laws enacted with their collaboration. The civil responsibility of physicians is only for imprudence or negligence contrary to ordinary common sense, so that jurisprudence in this respect is very elastic. At the same time, recent court decisions have held the physicians responsible for having written morphin by mistake for quinin; for having overlooked absolutely unmistakable syphilis, and for gross errors in the number of grams of dangerous drugs prescribed. The physician is not held responsible for radiodermatitis, even very serious, unless the application was only for "beauty purposes." The French courts are very strict in their judgment of such cases where a simple blemish was thus transformed into an actual lesion. A Lyons court acquitted a physician in a damage suit as he had applied only the dose given in a certain textbook, while the Caen court condemned a physician who had failed to specify the dose of a toxic drug ordered or the mode of application, and had not supervised its use.

**Occupational Diseases.**—Balthazard discusses the application of the new French law in regard to workmen's compensation for injury from lead poisoning and from mercury poisoning. There are twenty-two trades listed as liable for poisoning with mercury.

**The Proposed Social Insurance in France.**—Boudin analyzes the bill which is now under discussion. It forms a volume of 228 pages which has been distributed to the members of both houses. It is mostly the work of Cahen Salvador, a *conseiller d'état* in the labor department of the government. The bill provides for the free choice of physician by the insured, the necessity for contracts arranged between the insurance companies and the local or national organizations of physicians, a control board of equal numbers of officials and physicians, and insurance for wage-earners with incomes up to 10,000 francs. The employers retain 5 per cent. of the annual wage to pay the dues.

**Standards for Estimating Degrees of Disability as Basis for Pensions.**—Rieux has the chair of medical expert testimony and military legislation at the Val-de-Grâce military medical school. He criticizes the prevailing legislation, pointing out inconsistencies, such as, that those disabled by disease get a higher pension in proportion than those disabled by wounds. He says that all the men who contracted malaria in the Near East campaigns are now apparently cured, their blood free from parasites. Amebiasis, on the other hand, still lingers, but often is mistaken for persisting malaria, and hence fails to receive proper emetin or other treatment.

**The Official Tariff for Treatment of Industrial Accidents.**—Decourt is vice president of the Union des Syndicats Médicaux, and to his initiative is due the new legislation on this subject. He describes its spirit and the details of its workings.

**Professional Secrecy and the Courts.**—Perreau is a legal authority, and he explains the justice of some recent court decisions which apparently conflict with professional secrecy. In one case a midwife confessed to having made a practice of abortion and gave the names of the women, and they were all prosecuted, notwithstanding their lawyers' appeal for the sacredness of professional secrecy. The decision of the court was based on the fact that the abortion did not form part of the legitimate practice of midwifery, and consequently was outside the pale of professional secrecy. The abortions were not for therapeutic but for criminal purposes only. Perreau continues "A physician utilizing his technical knowledge for some act foreign to the purposes of his profession is not practising his profession while doing so." In another case the principal of a school called in a physician to report on the health of one of the teachers. He made a written report and then explained the technical terms in person to the principal. The teacher was dismissed, and he sued the physician for damages for the loss of his position, but the courts threw out his claim. Recent legislation and decisions in France have confirmed more and more solidly the principle of professional secrecy.

## Presse Médicale, Paris

July 6, 1921, **29**, No. 54

*Physiologic Urobilinuria. M. Brulé and H. Garban.—p. 533.
Treatment of Ascaridiasis. A. Riff.—p. 534.
*Postoperative Peptic Ulcer. Léon-Meunier.—p. 536.

**Physiologic Urobilinuria.**—Brulé and Garban found small amounts of urobilin constantly in the urine of supposedly normal adults and in healthy children, even in the new born. It is impossible to measure the exact amount, but by comparing the intensity of fluorescence we can compare the findings instructively. They accept as beyond the physiologic limit any fluorescence evident by ordinary daylight.

**Postoperative Peptic Ulcer.**—Meunier discusses the period between the gastro-enterostomy and the development of the peptic ulcer. The mucosa of the jejunum is not constructed to resist the action of the unneutralized gastric juice, and the diet should be regulated after a gastro-enterostomy to reduce gastric secretion as much as possible. He warns that meats stimulate the reflex psychic secretion while starchy dishes do not, and fats depress secretion by their action on the secretory nerves. The surgeons like to have the success of their operation confirmed by gastronomic feats, but Meunier forbids all meat for six months after a gastro-enterostomy, and has every meal commence with butter, cream or potatoes with half their weight in butter, or two tablespoonfuls of olive oil are taken. Vegetables, spaghetti, eggs and fruits are freely allowed but with little seasoning, and always mashed soft or stewed. A glass of milk is taken between meals, and a malted beverage after meals. Twenty-two patients who have lived under these restrictions have never shown any signs of peptic ulcer, while he has been called on to treat five cases of peptic ulcer during the same period, since 1918. An early diagnosis of a peptic ulcer is possible by giving the patient a glass of distilled water to drink containing about nine drops of ammonia, fasting. The stomach content obtained without aspirating, the patient horizontal, is then examined for hematin. This test should be negative. Then a second glass of the ammonia water is ingested after a tablespoonful or two of charcoal have been stirred into it. The alkaline fluid laves the peptic ulcer as it passes, and it washes out the hematin which is refound in the stools in case the test is positive. This test should always be applied when tardy pains develop after a gastro-enterostomy. The combination of negative stomach and positive stool hematin findings testifies to a jejunal ulcer, the treatment of which can be only surgical.

July 16, 1921, **29**, No. 57

*Total Laryngectomy. E. J. Moure and G. Portmann.—p. 561.
Diagnosis of Mixed Chancre. G. Thibierge and P. Legrain.—p. 563.
*Superposed Infections in Tuberculosis. M. Lavergne.—p. 565.

**Total Laryngectomy.**—Moure and Portmann describe with eight illustrations the technic for removal of the entire larynx

V. 192

after cutting a large square flap to turn back on one side. The whole operation is done at one sitting, under regional anesthesia. All their thirty-one patients thus treated since 1913 recovered except one that died the fourth day.

**Superposed Infections in Tuberculosis.**—Lavergne relates the case of a child, now nearly 4, whose mother developed pulmonary tuberculosis, with bacilli in the sputum ever since, when the child was about 11 months old. It has been with its mother constantly during this period, and thus has been submitted to repeated reinfections, but it shows no trace of tuberculosis, at most a slight subdulness under the right clavicle. According to the prevailing ideas, this child should have developed tuberculosis, while in fact the child seems to have developed immunity under the influence of the repeated small infections with its mother's bacilli. The fact that the exposures did not begin until the child was nearly a year old was probably responsible for its conquering the infection, instead of succumbing to it. Possibly the future may reveal that effectual prophylaxis against tuberculosis may be realized by frequent injections of a very few tubercle bacilli of attenuated virulence.

## Chirurgia degli Organi di Movimento, Bologna

June, 1921, **5**, No. 3

*Coxa Vara. A. Anzoletti.—p. 249.
*Skeletal Malformations. B. Schiassi.—p. 299.
*Streptothricosis of Joints. G. Bolognesi.—p. 340.
*Osgood-Schlatter Disease. S. Solieri.—p. 353.

**Coxa-Vara.**—Anzoletti discusses the mechanism of, and the principles for, correcting coxa-vara, comparing the various methods.

**Nervous and Vascular Symptoms from Skeletal Anomalies.**—Schiassi reports a group of cases in which some malformation in the lumbar-sacral region or elsewhere induced pains difficult to comprehend. In two cases described there was a peculiar sciatica in men of 42, finally explained by radioscopy, and benefited by this knowledge in that positions were then assumed which relieved the nerves from pressure. In another group the anomaly in the vertebrae was in the cervical region. One woman of 21 had neuritis of the left brachial plexus, with a trophic lesion in the finger, the whole developing after a period of hard manual work. In a second case there was mild neuritis of the right brachial plexus. Thrombo-arteritis was pronounced in both, and the limb was gangrenous in the second case. A cervical rib was found responsible in both cases, and it was removed. In a third case there were disturbances in arteries, veins and lymphatics, and the cervical rib seemed to be the site of a tuberculous process in the woman of 23. Schiassi discusses with illustrations the operative treatment that might be applied in such cases of thrombosis of the first portion of the subclavian from any cause.

**Streptothricosis of Joints.**—Bolognesi reports a case of chronic suppurating osteo-arthritis of the ankle in a boy of 11, with fistulas. Bacteriologic examination was constantly negative until a streptothrix was cultivated from the lesion, and the disease was reproduced in rabbits, guinea-pigs and dogs by injection of a scrap of culture of the fungus directly into the knee or other joints. He had obtained similar positive results with a sporotrichum. The boy in question is on the road to complete recovery under large doses of potassium iodid. Some of the subacute and chronic joint lesions deceptively resembled tuberculous processes. Others were more of a fibrous arthrosynovitis with hyperplasia, production of papillary vegetations.

**Osgood-Schlatter Disease.**—Solieri operated in a case described in a boy of 12, applying Soule's method of fastening the tuberosity of the tibia in place with a peg from the crest of the tibia below. This cures at once without waiting for the problematic spontaneous cure. He gave thyroid treatment in his case to supplement the operation.

## Policlinico, Rome

June 27, 1921, **28**, No. 26

*Rat-Bite Disease in Woman. Stretti and Mantovani.—p. 875.
*The Digestive Tract in Pernicious Anemia. P. Biffis.—p. 877.
Vaccine Therapy of Typhoid in Children. G. Salvetti.—p. 884.

**Rat-Bite Disease.**—Stretti and Mantovani describe a spirochete which they cultivated from the blood of a woman who had been bitten by a rat at Bologna and had developed typical sodoku. A rapid cure followed intravenous injection of 0.15 gm. of neoarsphenamin. The disease was reproduced in guinea-pigs inoculated with the blood.

**The Digestive Tract in Pernicious Anemia.**—In Biffis' 30 cases of pernicious anemia no cause could be discovered in 20, but in 5 of the 7 women the anemia had developed in connection with a pregnancy. In 50 per cent. the motor function of the stomach was exaggerated, and achylia was evident in all but one case. The achylia, however, seemed to be a consequence rather than a cause of the pernicious anemia. The rapid evacuation is due to insufficiency of the pylorus. Diarrhea was frequent but never severe, although protracted in some. Its subsidence under administration of hydrochloric acid shows that the achylia was mainly responsible for it.

July 4, 1921, **28**, No. 27

*Statistics of Morbidity Among Wage-Earners. F. Mazzone.—p. 907.
Inflammation of Reduced Inguinal Sac. A. Angeli.—p. 915.
Cinchonin as Substitute for Quinin. G. Bini.—p. 919.

**Morbidity Among Wage-Earners.**—Mazzone reports the results of extensive statistical research among telephone workers, etc., as an aid for discussion of compulsory insurance.

## Rivista di Clinica Pediatrica, Florence

March, 1921, **19**, No. 3

*Funnel-Shaped Thorax and Endocarditis. A. F. Canelli.—p. 129.
*Vaccine Therapy in Enteritis in Infants. L. M. Spolverini.—p. 162.
*Measurement of Respiration. D. Pacchioni.—p. 170.
*Nervous Manifestations After Diphtheria. P. Busacchi.—p. 180.

**Chronic Endocarditis with Deformed Thorax.**—The boy of 11 had been long under observation and the necropsy findings confirmed the diagnosis of chronic endocarditis. There was a funnel shaped depression in the sternum, and the child had had an attack of febrile rheumatism early in life.

**Vaccine Therapy in Prevention and Treatment of Enteritis in Infants.**—Spolverini injected 46 infants with an aqueous emulsion of a polyvalent stock vaccine, made with various strains of colon bacilli. The infants were between 5 and 11 months old, and all but 4 had a slight tendency to diarrhea. In these 4 there was actual enterocolitis. The three injections of the vaccine were made at the beginning of summer. Only one of the infants was entirely breast fed, and 16 got nothing but the bottle. The effect, both curative and prophylactic was extremely encouraging. Even if it should prove that the immunity conferred by the vaccine lasts only a few months, this is enough to tide the child past the most dangerous period and season. No effect was apparent in 7 of the children; 4 in this group were debilitated, but one infant was in very good general condition. The only difficulty is to persuade the mothers to allow their healthy babies to be given the three injections to protect them against hypothetic bowel disturbance during the heated term. He obtained their consent only by showing them the curative action of the vaccine in the children with enterocolitis.

**Apparatus Measuring Depth of the Respiration in Infants.**—Pacchioni's spirobatometer is described with illustrations. The elastic pad is belted to the epigastrium.

**Postdiphtheric Nervous Phenomena.**—Busacchi refers to the involuntary movements associated with the volitional movements in children with paralysis after diphtheria. In some this synkinesia is restricted to the face, and it may precede the paralysis. Sometimes the movements occur in connection with pronouncing certain letters. The child's character may change, fluctuating between whining peevishness and wild glee, the face growing very red at times. Others present motor phenomena suggesting chorea by their sequence and automatism, but not so irregular. The raising of the eyebrows, frowning, wrinkling the eyelids, etc., occur rhythmically and symmetrically.

## Brazil-Medico, Rio de Janeiro

June 4, 1921, **35**, No. 23

*Leprosy in Northern Brazil. A. Da Matta.—p. 287.

**Leprosy in Northern Brazil.**—Da Matta says that in his twenty-six years of practice in Amazonas he has never seen

but two Indians with leprosy. This rarity of leprosy among the Indians is confirmed by the lack of any reproductions of leprosy mutilations in the pottery figures from prehistoric Peru, although reproductions of other mutilating diseases and deformities are common. None of the early travelers in Brazil mention leprosy among the Indians. He estimates at from 800 to 1,000 the total number of lepers in the Amazon region.

## Mitteil. a. d. Med. Fak. Univ., Tokyo

Dec. 9, 1920, **25**, No. 1

*Influence on Nephritis of Alkaline Reaction of Urine. M. Hara.—p. 1.
*Phagocytic Action of Calcium Chlorid on Tuberculosis. S. Nagai and M. Ito.—p. 25.
*Tissue Proteases. S. Nakagawa.—p. 67.
Histology of Crocodile Viscera. H. Taguchi.—p. 119.

**Influence on Nephritis of Alkaline Reaction of Urine.**—Hara's experiments on rabbits confirmed the injurious action on the kidneys of acid infused or produced in the body. A diet which induces an alkaline reaction in the urine has a pronounced protecting action against experimental nephritis. (In English.)

**Calcium Chlorid Promotes Phagocytosis.**—Nagai and Ito relate that calcium chlorid acts on the leukocytes, stimulating them to exaggerated phagocytosis. The leukocytes incorporated the tubercle bacilli more readily and in larger numbers under the influence of the calcium chlorid by mouth or vein. The opsonin content does not seem to affect the outcome, nor the age of the patient. The details of the extensive experimental and clinical research are given in full. They throw light on the efficacy of calcium chlorid in treatment of a certain stage of tuberculosis, as they have established in treating the tuberculous inmates of the Tokyo city poorhouse. (In English.)

**Tissue Proteases.**—This is the first of a series of articles on ferments, as studied in Inada's service.

## Deutsche medizinische Wochenschrift, Berlin

June 30, 1921, **47**, No. 26

Causes and Treatment of Sterility in Women. G. Winter.—p. 733.
Studies on Tuberculosis. VI. R. Jaffé.—p. 734.
Specificity of the Tuberculin Reaction. E. Sons and F. von Mikulicz-Radecki.—p. 735.
Antivenereal Prophylaxis. F. Neufeld.—p. 737.
Spirochetes in Visual Tract in Paresis. Igersheimer.—p. 738.
Bacteriologic Studies on Symptomatic Anthrax. Uchimura.—p. 738.
Exclusion Operations in Chronic Gastric Ulcer. Rotter.—p. 739.
Roentgen-Ray Treatment for Pathologic Fractures. Kohler.—p. 741.
Cause of Fibrillation in One Chamber of the Heart; Paroxysmal Tachycardia. S. de Boer.—p. 742.
Compression of Esophagus at Two Points in Arteriosclerotic Cardiac Insufficiency. M. von Falkenhausen.—p. 743.
Prepyloric Residue in Gastric and Duodenal Ulcer. Lenk.—p. 744.
Diphtheria of Vagina in Parturient. W. Lang.—p. 744.
Cure of Jaksch's Anemia with Purpura by Blood Transfusion. W. Arkenau.—p. 745.
Isopropyl Alcohol for Hygienic and Cosmetic Purposes. H. Boruttau.—p. 747.
Present Status of Pathology and Pathogenesis of Scurvy. W. Koch.—p. 749.
Management of Normal Postpartum Period. L. Blumreich.—p. 750.

## Jahrbuch für Kinderheilkunde, Berlin

1921, **95**, No. 1-2

*Nature and Import of Erythema Nodosum. H. Ernberg.—p. 1.
*Injury of Fetus from Roentgen Rays. E. Stettner.—p. 43.
*The Biologic Reactions to Protein Therapy. B. Epstein.—p. 52.
*Antigens in Milk of Tuberculous Cows. B. Epstein.—p. 64.
*Sensitizing Action on Pulse from Thyroid and Pituitary Extract. E. Schiff and A. Bálint.—p. 73.
*Intubation Experiences. M. Hohlfeld.—p. 80.
"Kidney Function in Infants." J. C. Koch.—p. 88. Reply. E. Stransky. and A. Bálint.—p. 92.

**Erythema Nodosum.**—Ernberg is chief of the Stockholm children's hospital, and he reviews eighty-six hospital cases of erythema nodosum in children in addition to a number of private patients. Study of this material has convinced him that erythema nodosum is the manifestation of an anaphylactic process in the course of tuberculosis. The tuberculous focus is usually in the glands connected with the lungs; it may escape detection without roentgen examination. The erythema may temporarily subside but the irregular temperature during the intervals shows that the disease is still lurking in the body. The erythema nodosum in every feature—even under the microscope—resembles the lesion induced artificially by the tuberculin test. The benefit from tuberculin treatment is a further argument in favor of this view, as also the resemblance of erythema nodosum to other known superficial processes of an anaphylactic nature. This conception of erythema nodosum in children represents progress, as it warns of tuberculosis already installed, and the danger of delay in measures to cure it.

**Injury of Fetus from Roentgen Exposures.**—In the case illustrated by Stettner, as also in Aschenheim's case, roentgen-ray treatment had been applied to a uterine myoma without suspicion of an existing pregnancy. The eyes of the two children born at term were deformed, as also the ears and genitals, and there was general disturbance in coordination and in the mental functions when the children were examined after the age of 2. The symptoms were those of both inflammatory origin and of development defects. The growth in height is seventeen months below normal in his case, and the ossification fourteen months backward.

**Protein Therapy in Tuberculosis in Children.**—Epstein has made 1,800 parenteral injections of normal horse or sheep serum in 46 tuberculous children from 3 months to 14 years old. The amount was usually 2 c.c. and the injections were made daily. Only 7 of the 46 children responded with fever to the injections. None of the others showed the least rise of temperature, tested at three hour intervals. On the other hand, preexisting fever sometimes subsided. Even in those whose temperature rose, this occurred without any regularity. The response to the normal serum thus differed essentially from the responses to parenteral injection of milk. No focal reaction was ever observed. Evidences of serum sickness were noted in 47 per cent. of the cases, but they were mild and left no permanent injury. They developed at once in 3 cases; in the course of six to ten days in 8; between the tenth and fortieth days in 10, and between the fortieth and ninetieth in 4. In 4 of the total 46 there was an actual shocklike reaction occuring once after a large number of injections had been made without reaction; the shock passed off rapidly and harmlessly. In 4 others there were symptoms suggesting serum sickness severe enough to call for suspension of the treatment. In some of these a change from horse to sheep serum or the reverse arrested the disturbances, and the change of serum had a desensitizing action so that the serum previously used could be resumed. The weight increased during this protein therapy after a preliminary decline. The child organism does not seem to become accustomed to the protein therapy in time but rather to become more sensitive.

**Tuberculous Antigens in Milk of Tuberculous Cows.**—Epstein's research has apparently confirmed the presence of an antigen in the milk of tuberculous cows while normal cow's milk contains nothing of the kind. The antigen content varies in different animals and at different times. He injected intradermally 0.1 c.c. of the milk of cows with advanced tuberculosis. The milk had been boiled for ten minutes and was absolutely free from tubercle bacilli. In sixty-four injections of this kind there was a reaction like that to the tuberculin Pirquet test in the children; it was always positive in the tuberculous children, never positive in the nontuberculous. In control tests with normal cow's milk, four children gave an apparently contradictory response, but the supposedly normal cows soon developed symptoms of tuberculosis. Their milk had revealed its presence before any other sign had called attention to it.

**The Substandard Pulse in Children.**—Schiff and Bálint here describe the results of tests with epinephrin on children with stable and unstable pulse. Thyroid and pituitary extracts seemed to sensitize to the action of epinephrin.

**Experiences with Intubation.**—Hohlfeld fastens with adhesive plaster on the cheek the end of the thread tied to the tube, and only 4 of the 428 intubated children pulled the tube out. Some of the children bit the thread off, and when this occurred he drew out the tube and replaced the thread. In 56 of the cases the attendants had to remove the tube in a hurry on account of suffocation; in several, more than once. By wrapping adhesive plaster around the thread where it

passed between the teeth it was protected against being bitten. In 64 cases the tube was coughed out once, and in 32 more than once. The style of tube seems to be a factor.

## Münchener medizinische Wochenschrift, Munich

June 10, 1921, **68**, No. 23

*Stones in Pelvic Portion of Ureter. Kielleuthner.—p. 691.
Diastatic Ferments. W. Biedermann.—p. 692.
War Conditions and Growth of German Youths. Kaup.—p. 693.
The Pregl Solution in the Service of Surgery. Schmerz.—p. 696.
*Blood Reinfusion in Extra-Uterine Pregnancy. Schweitzer.—p. 699.
Seborrheic Rosacea. P. G. Unna.—p. 701.
*Etiology and Therapy of Chronic Eczemas. Hilgermann.—p. 702.
Venous Murmurs Elicited by Certain Arm Movements. Muck.—p. 706.
New Derivatives of Quinin. A. Heffter.—p. 707.
A Simple Diagnostic Roentgen Apparatus. H. Kress.—p. 708.
Examination and Therapy of Common Foot Pains. Lange.—p. 709.

**Stones in Pelvic Portion of Ureter.**—Kielleuthner states that of the various false diagnoses rendered in the presence of stone of the ureter on the right side, appendicitis is the most common. From his records he collected no less than eight cases in which after appendectomy he had found stones in the lower portion of the ureter. To be sure, the two conditions are occasionally concomitant. If pains continue after appendectomy, the possibility of stones in the ureter should be considered. The differential diagnosis is often exceedingly difficult. In both conditions the pains may be localized at McBurney's point. By palpation, differentiation of the appendix and the ureter is often not possible with any degree of certainty; neither through the distended abdominal walls, nor through the vagina or the rectum. The gastro-intestinal symptoms, arrest of peristalsis, vomiting and meteorism are common to both affections; likewise the appearance of bladder symptoms and dysuria. Increased temperature and high pulse rate may also occur in both conditions. Roentgenography is the surest means of avoiding diagnostic errors, but in from 4 to 8 per cent. of the cases even this procedure will fail of its purpose.

**Experiences with Own Blood Transfusion in Extra-Uterine Pregnancy.**—During the period from Jan. 1, 1919, to April 1, 1921, Schweitzer operated in 34 cases of ruptured tubal pregnancy with hemorrhage. In 21 cases he reinfused the patient's own blood. He found this in the main a useful and in many cases a life-saving procedure. It is easy to carry out. Its freedom from danger depends on three factors: freedom from infection; absence of blood clots, and intact condition of the blood cells. The first two conditions are easily complied with, but the third is not so easy to control. Schweitzer lost one patient, a married woman 27 years old, from hemoglobinuria, although in the reinfusion of the patient's own blood he had proceeded in the same manner as in his other cases. If it should be discovered that hemoglobinuria, in spite of all known precautions as regards injury to the blood cells, cannot be prevented, he fears that the harmlessness of this salutary procedure will be brought into question. While other writers have reported disturbances following own blood reinfusion, such as marked cyanosis, dyspnea, pains in the thorax, convulsive jerks, and chills, which they interpreted as due to the toxic effects of the waste products of the decomposing blood, no permanent injuries or deaths have been reported heretofore as the direct result of own blood reinfusion.

**Etiology and Treatment of Chronic Eczemas.**—Hilgermann relates that his experience, extending over many years, with eczemas leads him to regard bacteria or fungi, or the two in symbiosis, as the causative agents. Constitutional predisposition and other epidemiologic factors are of only secondary influence, though they must not be underestimated, since they favor the implantation of the organisms. Staphylococci, diplobacilli, micrococci and *B. capsulatus* have been isolated; also of the fungi, the mucor, aspergillus, streptothrix and yeast-plants. Only by means of bacteriologic technic; that is, by obtaining cultures of the inciting organisms and the preparation of autovaccines, can chronic eczemas be permanently cured. Vaccine therapy must be continued until the efflorescence disappears. After a course of vaccine treatment consisting of from 12 to 14 injections in increasing doses, a few more injections should be given after pauses of from six to eight weeks. The cells are thus aroused to renewed activity and produce intensely active protective substances.

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Median Prostatectomy. F. Berndt.—p. 727.
Autoexamination of Cornea, Lens and Vitreous. O. Haab.—p. 728.
*Direct Injections in Cardiac Paralysis. H. Guthmann.—p. 729.
*Epinephrin in Cardiac Failure During Narcosis. H. Frenzel.—p. 730.
*Intracardiac Injections for Resuscitation. E. Vogt.—p. 732.
Diagnostic Value of Wildbolz' Urine Test. Bosch.—p. 733.
*Contagiousness of Measles. M. Baur.—p. 736.
Prolongation of Incubation in Measles by Infections. Baur.—p. 736.
The Physician in Relation to Aeronautics. W. Schnell.—p. 737.
Simple Brace for Curved Spine. L. Aubry.—p. 740.
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General Paresis Rare Among Uncivilized Nations. Gärtner.—p. 743.

**Intracardiac Injection of Epinephrin-Strophanthin in Acute Cardiac Paralysis.**—Guthmann recalls that the intracardiac administration of drugs in moments of grave danger by reason of weakness or arrest of the heart action is such a natural intervention that it has been tried on several occasions. He says that hitherto no life has been thereby saved, although Dörner reports that in one case he was able to keep one patient alive for five hours after he seemed to have expired. If we examine the reports of writers on the subject it becomes evident why the intervention has always failed; namely, because the injections acted on the heart only as an energetic stimulant but did not produce any therapeutic effect. If we do not succeed in removing the cause of the cardiac weakness or standstill within a short time after the injection, the heart action must necessarily again soon fail. Guthmann reports in detail the results in five cases of the intracardiac injection of 1 c.c. epinephrin plus 1 c.c. strophanthin. In two of the cases the patients recovered, although when the intracardiac injections were given, the heart sounds could not be heard. The epinephrin acts instantaneously but the effect soon wears off. At this point, the strophanthin begins to act. The pulse becomes more regular, the motor power of the heart is increased and the vessels may be seen to contract. Only by the combination of the two drugs can an instantaneous and a lasting effect on the heart be secured. No ill effects resulting from the injections were observed.

**Intracardiac Injections of Epinephrin in Cardiac Standstill Occurring During Anesthesia.**—Frenzel reports that in eight severe cases on record of cardiac standstill associated with anesthesia, in two of which heart massage had proved ineffectual, intracardiac injections of epinephrin were given with permanently favorable results in five. No ill effects from the epinephrin were observed. The danger of untoward accidents occurring as the result of the injections is very slight if the proper technic is used. The lasting effect of the injections depends to a great extent on the moment chosen for the intervention; only from early injections may good results be anticipated. Frenzel thinks therefore that in view of these facts intracardiac injections in cardiac standstill resulting during anesthesia should be regarded as a routine measure for resuscitation, and that during every narcosis the instruments needed for intracardiac injection of epinephrin should be ready at hand. It should be noted, however, that epinephrin is not stable and should be renewed every three months. If artificial breathing and heart massage fail after three minutes to revive the patient, an intracardiac injection of 1 mg. of epinephrin should be given, while other resuscitative measures are continued. He reports a permanently successful case from his own experience.

**Basis of Intracardiac Injections for Resuscitation.**—Vogt distinguishes three forms of intracardiac injection: (1) intrapericardial; (2) intramyocardial, and (3) intraventricular, and says that intraventricular injections are the most effective. He discusses the surgical indications for such injections. They must be given within ten minutes after cardiac standstill. In most of the successful cases they were given within five minutes after respiratory standstill. If the injection is not given promptly, the more sensitive cerebrum cannot recover even though it should be possible to restore the heart beat. Camphor, caffein and digitalis preparations do not have a strong enough effect, and may injure the heart tissues. Strophanthin has many good features, but one great disadvantage is that if by accident it is injected intramuscularly,

the myocardium may be badly damaged, for which reason Vogt rejects strophanthin. He states that even Fränkel, who introduced it into therapeutics, warns against its intracardiac use, while van den Velden, to whom we owe the idea of intracardiac injections, has given up its use entirely. Preparations of the suprarenal glands are the best remedies; their effect is often little short of miraculous. The maximal dose of 1 c. mm. must not be surpassed. Especial caution is needed in the presence of high blood pressure. Preparations of the pituitary gland are almost as effective as epinephrin, and do not necessitate quite the same caution in administration. A mixture of the two has been tried, but it remains to be seen whether there is any advantage in this. The technic of the injections is discussed, and he cites Pieri's recent compilation of 20 successful cases out of 76 in which massage of the heart was applied in circulatory failure. In the 15 successful cases on record of direct injection into the heart, 2 of the patients were over 50. Epinephrin was used in 9 of the cases, and strophanthin in one. In one of Vogt's own cases the heart was kept beating for twenty-four hours under the influence of a suprarenal preparation.

**Contagiousness of Measles.**—Baur has analyzed the data in connection with fourteen cases of measles in the infant ward of the Cologne University Children's Hospital, and concludes that the contagiousness of measles is confined to the catarrhal stage and to the first day of the exanthem. It reaches its maximum during the transition from the prodromal stage to the stage of eruption. Twenty-four hours after the eruption has developed the disease is not contagious.

## Wiener Archiv für innere Medizin, Vienna

June 30, 1921, **2**, No. 3


*Osteo-Arthropathy with Cancer of Lung. M. Weinberger.—p. 357.
*Acquired Hemolytic Jaundice. H. Pollitzer, H. Haumeder and S. Schablin.—p. 375.
*Vascular Spasm in Intermittent Claudication. E. Zak.—p. 405.
*Activation of Chronic Malaria. W. Schlesinger.—p. 421.
*Tetany. H. Elias and E. A. Spiegel.—p. 447.
*Blood Pressure in Diabetes. K. Hitzenberger.—p. 461.
*Chemistry of Pleural Effusions. M. Landsberg.—p. 467.
*Dyspnea. L. Hess.—p. 477.
*Relations Between Blood and Gastric Juice. M. Leist.—p. 491.
*Reaction to Tuberculin in Nephritis. A. Müller-Deham and K. Kothny.—p. 509.
*Nonneurogenous Nature of Gastric Ulcer. S. Jatrou.—p. 535.
*Pathology of Secretion of Bile. I. H. Beth.—p. 563.
*Cardiac Dyspnea. H. Eppinger and W. Schiller.—p. 581.
"Residual Nitrogen in Infectious Diseases." F. Wagner.—p. 625.
"Vascular Sclerosis." H. Eppinger.—p. 629.
*Puncture of an Artery. F. Högler.—p. 631.


**Hypertrophic Osteo-Arthropathy with Cancer of Lung.**—Weinberger reports an extreme case of hypertrophic pulmonary osteo-arthropathy in which the changes in the bones were an early symptom of a cancer originating in a bronchus. It is the third case of the kind, with necropsy findings, on record, and he is inclined to assume toxic action from the neoplasm. It is analogous to the bone changes in phosphorus and arsenic poisoning, and the periosteitic changes in tuberculous dogs to which Wirth has recently called attention.

**Acquired Hemolytic Jaundice.**—In the ten cases described, six of the patients were men. The destruction of erythrocytes was three times as great in the women as in the men. Men seem to resist better the latent anemization evident in the microcytosis common to all the cases. All the patients had chronic fever except one whose temperature kept normal during the two weeks of observation. The connection between the fever and the intensity of the hemolysis was evidenced by the return of the temperature to normal after removal of the spleen. The splenectomy proved invariably successful, even in one case in which the jaundice dated from childhood, and the interval since the operation has been seven years. Special features of the habitus and blood findings confirm that acquired hemolytic jaundice is an independent morbid entity.

**Intermittent Limping.**—Zak's tests and experiments on the healthy demonstrated that the muscles under volitional control, when the blood supply is impeded, are liable to develop a condition corresponding to that of intermittent claudication. The relative anemia of the arterial vessels induces a readiness to contract. This entails spasm of the vessel when the accumulating waste metabolic products reach a certain amount, and this is liable to occur even with sound arteries when the central normal dilating impulse is overcome by the local constricting impulse from the conditional reflex.

**Activation of Chronic Malaria.**—Fifty-one malarial subjects were given intragluteal injections of 2 or 3 c.c. of a 10 per cent. solution of sodium nucleinate. The appearance in the blood of active forms of the plasmodium is the signal for intensive treatment, although in itself it is a favorable sign in that it probably stimulates production of antibodies. To accomplish this without activating the malaria enough to bring on an attack, is a problem which Schlesinger suggests may be solved by administering the nucleinic acid in the form of active yeast by the rectum. Calf thymus tissue in the diet has a similar activating effect, and this might be anticipated with other foods rich in nuclein. The flaring up of malaria in the spring may be connected with the young fresh vegetables eaten at that season. The spring regeneration in nature and the parallel rousing of malaria in the spring may thus be linked together. In recent and still active malaria, nuclein-rich foods should be avoided, as further activation would be injurious. He gave yeast and quinin on alternate days in a case of furunculosis superposed on malaria, and both showed marked improvement. It is possible, he remarks in conclusion, that foods rich in nuclein might prove useful in all cases in which stimulation of secretions is desired, especially of the ductless glands. We might even extend this assumption to the possibility of promoting production of antibodies by nuclein-rich foods.

**Tetany.**—Elias and Spiegel tabulate the findings in respect to the phosphorus content of the blood which is characteristically high in tetany.

**Blood Pressure in Diabetes.**—In 97 diabetics and 561 nondiabetic controls the blood pressure was found above normal in the elderly and below normal in the younger diabetics, compared with the average for their age.

**Resorption of Pleural Effusions.**—Landsberg compared repeatedly the chemical composition of the pleural effusion with the clinical course. This demonstrated that the resorption of transudates and exudates is the result of a process of parenteral digestion of protein, a fermentative process of proteolysis by the recuperating tissues.

**Pathology of Dyspnea.**—Hess incriminates a permanent or paroxysmal spasm of the blood vessels in the lungs as aiding in the production of dyspnea in certain cases. He describes the necropsy findings in four cases of paroxysmal dyspnea. In all there had been endocarditis and the layers of the pleura were adherent. Each presented areas in the lung showing normal conditions along with areas in which conditions indicated chronic stasis. When chronic stasis is due to heart disease, it affects the whole lung, but in these cases normal areas bordered on the stasis area. Such conditions imply spasm of these vessels, and spasm of this kind is ample to explain the attacks of dyspnea. It explains further the failure of our therapeutics when we administer a drug that may happen to have a vasoconstricting by-effect. Our efforts then should be to change to a drug that has a vasodilating action.

**Reciprocal Relations Between the Composition of Blood and of Gastric Juice.**—Leist determined in sixty persons the chlorid and the water content of the blood serum at the same time that he determined the hydrochloric acid content of the gastric juice. The findings confirm that gastric secretion is independent of the blood so long as the protein content of the serum is within normal range. As soon as the serum shows subnormal protein content, hypochylia or achylia usually becomes evident. As the hypalbuminosis becomes more pronounced, the secretion of hydrochloric acid grows less to correspond. He found hyperchloridemia without hydremia frequent in exophthalmic goiter. Achylia was pronounced in two of eight cases of exophthalmic goiter, and anacidity in five. Hyperchloridemia was evident in all these anacidity and achylia cases, both in those with and those without hydremia.

**Hemorrhagic Nephritis with Positive Tuberculin Reaction.**—In ten cases of hemorrhagic nephritis, the acute clinical

picture persisted tenaciously, and all in this group presented a most decided reaction to the tuberculin test. The details related sustain the assumption that many cases listed as ordinary nephritis were of this type. There were no appreciable manifestations of active or latent tuberculosis, but that tuberculous infection was responsible for the long rebellious acute or subacute hemorrhagic glomerular nephritis was confirmed by the extreme sensitiveness to tuberculin and the recovery under tuberculin treatment. This does not imply necessarily tuberculous lesions in the kidney itself. The cases belong in the category of Poncet's "tuberculotoxic disease," with some severe chilling or acute tonsillitis as the exciting factor. In some of the cases described the high blood pressure indicated impending contracted kidney, and this in all probability would have been the outcome if it had not been averted by the tuberculin treatment. This assumption supplies a missing link in the etiology of contracted kidney, both the secondary nephritic type and the apparently primary cases.

**Nervous Origin of Gastric and Duodenal Ulcer.**—Jatrou's tests of thirty persons with ulceration in stomach or duodenum failed to disclose any evidence of special dysfunction of the vegetative nervous system.

**Test for Bile Acids in Duodenal Juice.**—Beth tabulates the findings in the fluid obtained with the duodenal tube in twenty-four patients with various internal diseases. He compared them with the blood findings, and thus obtained remarkable insight into the functioning of the liver.

**Cardiac Dyspnea.**—Eppinger and Schiller state, as the outcome of the extensive experimental and clinical research described, that the acidity of the blood is not increased in heart disease. Hence the assumption is untenable that excessive acidity is the main factor in cardiac dyspnea.

**Puncture to Obtain Arterial Blood.**—Under local anesthesia the skin is incised and the artery loosened up, and two silk threads passed beneath it. Then a snip with fine scissors releases the blood which spurts in a large curve. When enough has been caught in the dish held to receive it, the threads are tied, the artery buried and the skin sutured. This is the technic with the temporal artery. With the radial artery, no ligation is required, the needle being run lengthwise into the artery after it has been lifted out of its sheath. The hole left in the artery closes up when pressed with a gauze sponge for from three to ten minutes. Högler has applied this technic to the radial artery in eighty cases; it proved highly satisfactory except in two cases with blood pressure above 250 mm. mercury. These required ligation. In future he will use a needle of not more than 1 mm. diameter when the blood pressure is extremely high.

## Wiener klinische Wochenschrift, Vienna

June 23, 1921, **34**, No. 25

Favorable Results in Treatment of Epilepsy (Two Cases) by Extirpation of Suprarenal Gland (Brüning). E. Kutscha-Lissberg.—p. 299.
Puberty Gland in Relation to Tuberculosis. H. Mautner.—p. 300.
Theory of Narcosis. H. H. Meyer.—p. 300.
Medicolegal Responsibility of Surgeons. A. Haberda.—p. 301.
No Recurrence of Psoriasis Since Course of Emetin. V. Pranter.—p. 303.

## Zeitschrift für urologische Chirurgie, Berlin

June 13, 1921, **6**, No. 5-6

*Incontinence from Spina Bifida. A. v. Lichtenberg.—p. 271.
*Removal of Broken Catheter in Urethra. A. v. Lichtenberg.—p. 282.
*Anastomosis Between Ureter and Pelvis. A. v. Lichtenberg.—p. 284.
*Perirenal Urine Cysts. F. J. Kaiser.—p. 286.
Cystic Lymphangioma of Scrotum. Koloman Haslinger.—p. 293.
*Temporary Exclusion of Urethra. A. v. Lichtenberg.—p. 297.
*Transplantation of Testicle. R. Lichtenstern.—p. 305.
*Closed Renal Tuberculosis with Cavities. Alois Wolff.—p. 314.

**Operative Treatment of Incontinence from Spina Bifida.**—Lichtenberg's patient was a boy of 10 who had always been subject to enuresis and was pale and weakly, but otherwise apparently normal. The discovery of latent lumbosacral spina bifida explained the failure of all the various measures that had been applied in treatment. He freshened the edges of the cleft and closed it with an implant from the tibia, after loosening up the meninges and nerves protruding from the cleft. There was no further incontinence, and the boy has grown strong and ruddy during the thirteen months since. Only about once in four or five weeks is there still any bedwetting. Necropsy in another case of incontinence of urine from spina bifida explained the mechanism involved. The cleft in the spine can usually be palpated, and the anus gapes. The disturbances are progressive, and the urinary apparatus becomes finally injured beyond repair. Early operative intervention is the only salvation. The technic he used protects the cauda equina against trauma and chilling. Katzenstein has reported two similar operative cases.

**When the Catheter Breaks Off in the Urethra.**—In this contingency, Lichtenberg introduced into the urethra a lightly oiled metal sound that just fitted into the lumen of the catheter. The broken off fragment was held firm with the left hand through skin and urethra, and the sound was passed into its lumen and pushed in hard and firm. Then, as the sound was gently withdrawn, the broken off portion came with it. The poor quality of the catheters nowadays has brought him two cases of the kind recently in old prostate disturbance. If necessary, a thread could be passed through the fragment of catheter, the needle piercing the skin, urethra wall and catheter, to keep it from being pushed up into the bladder.

**Anastomosis Between Ureter and Pelvis.**—Lichtenberg shows in six illustrations his technic for ureteropyeloneostomy as he has successfully applied it in three cases.

**Perirenal Urine Cysts.**—The wheel of a wagon passed across the abdomen of the young man, and after the first collapse and signs of peritoneal irritation and retention of feces and flatus, there was no fever and no hematuria. Then the flank began to enlarge and no urine was voided on that side. These huge urine cysts develop more rapidly than is possible with hydronephrosis or with pneumoperitoneum. The differential diagnosis was easy. The cyst was reached through a lumbar incision, nearly three weeks after the accident, and several liters of urine were evacuated from it. The partly necrotic kidney and upper ureter were removed at the same time, and smooth recovery followed.

**Temporary Exclusion of Urethra.**—Lichtenberg expresses surprise that more systematic use is not made of an opening into the bladder to divert the urine in cases of complications of stenosis of the urethra. The literature contains various references to old urine fistulas which healed promptly after the urine had been thus diverted, but he does not know of instances on record where the urine was thus diverted solely to allow the healing of a urethral fistula or infected stricture, or with chronic stenosis in which measures to dilate the lumen meet with obstacles. He has now a record of six cases, and urges in such conditions routine suprapubic drainage of the bladder to give the urethra a chance to heal. The obstacles impeding the usual measures may then spontaneously subside.

**Transplantation of Testicles.**—Lichtenstein relates that the implanted testicle was cast off or absorbed in four cases in which he implanted a testicle in the scrotum after resection of the tuberculous testicle. In another case both testicles had been destroyed by a shell wound, and the man presented the typical symptoms of total castration. Lichtenstein slit a testicle and implanted each half separately on scarified muscle tissue in the inguinal region, under ether, and kept the man in bed for twelve days. The results in this and in twenty-one other cases since 1915 confirm the therapeutic effect of free testicle transplantation, and that this technic offers favorable conditions for survival, and for the continued functioning for years of the implanted testicle. He adds that Lydston's high percentage of cases in which it was cast off is due to his method of implantation in the scrotum. Conditions here are far from being as favorable for vascularization as in a bed cut for it in the fascia over the oblique muscle in the inguinal region, slightly scarifying the muscle. The implant can be a retained testicle from another person who has one normal testicle. The father or brother will sometimes give a testicle for transplantation, especially when it is explained that only a half or third of the testicle is required. In one of his cases the testicle was derived from an operation elsewhere, and had been kept on ice for several hours. The results were faultless, as also in a case in which he implanted a testicle taken from a ram.

**Renal Tuberculosis.**—Wolff devotes over sixty pages to an illustrated description of nine cases of tuberculous cavities in one kidney which had become completely shut off from the bladder. He reviews the literature on the subject of this "closed cavernous renal tuberculosis" or "spontaneous nephrectomy." As no urine passes into the bladder, the diagnosis can be only presumptive. In four other cases described, the ureter was only intermittently obstructed, and the kidney was removed before the full clinical picture had developed.

## Zentralblatt für Gynäkologie, Leipzig

June 18, 1921, **45**, No. 24

Diagnosis and Nature of Pregnancy Nephrosis. Heynemann.—p. 838.
High Blood Pressure in Eclampsia. W. Gessner.—p. 847.
Midwives and the Prussian Reform Movement. Rissmann.—p. 853.
Tuberculosis of Female Genital Organs. M. Rudeloff.—p. 854.
*Treatment of Febrile Abortion. H. Heberer.—p. 859.
Treatment of Puerperal Wound Infection with Dakin's Solution. H. Hellendall.—p. 867.

**Treatment of Febrile Abortion.**—Heberer says that, no matter what the bacteriologic findings are, the best method of treating febrile abortion lies in the earliest possible evacuation of the uterine cavity.

## Nederlandsch Tijdschrift v. Geneeskunde, Amsterdam

June 11, 1921, **1**, No. 24

*Belladonna Preparations from Different Sources. W. Storm van Leeuwen and P. H. Maal.—p. 3242.
Forensic Hysteria. W. Beyerman.—p. 3253.
*Aviation Accidents and Their Causes. P. M. v. W. Palthe.—p. 3264.
Unsweetened Condensed Milk. I. Graanboom.—p. 3272.
Spontaneous Rupture of Heart. J. M. H. A. Martens.—p. 3274.

**Standardization of Belladonna Preparations.**—Van Leeuwen and Maal explain with concrete examples how chemical examination alone is not enough to test extracts of belladonna. Unless the physiologic and chemical tests yield concordant responses, the specimen of the drug should not be sold as standardized.

**Causes of Aviation Accidents.**—Palthe is chief of the medical research department of the aeronautic service and he here analyzes twenty-seven accidents that have occurred there among the thirty-five aviators. The largest proportion were due to failure to estimate distances properly, especially the distance between the aeroplane and the landing stage. The bad "landers" were always found to be defective in estimating distance by the binocular parallax alone without extraneous help. He emphasizes the importance of testing and training this binocular parallax for independent estimation of distances, and adds that the physician must learn by his own experience in flying how to estimate the reactions of the aviator. Regular daily control is also imperative, and the physician must keep in close touch with the flyers, and this on the aviation field.

## Acta Medica Scandinavica, Stockholm

June 17, 1921, **55**, No. 3

*Chronic Rheumatic Disease of Joints. K. Petrén and R. Johansson.—p. 229. (In English.)
*Lumbago and Similar Pains in the Back. F. Lindstedt.—p. 248.
*Spontaneous Variations in Strength of Wassermann Reaction. T. E. Hess Thaysen.—p. 281.
*Abdominal Reflexes in Multiple Sclerosis. G. Söderbergh.—p. 294.
Meningitis from Influenza Bacillus; Four Cases. M. Christiansen and M. Kristensen.—p. 298.
*Glycosuria and Diabetes in Exophthalmic Goiter. J. Holst.—p. 302.

**Chronic Rheumatic Disease of Joints.**—Petrén has been able to improve conditions to an astonishing extent in cases of arthritis deformans and other chronic rheumatic diseases of joints with heat, applied in various ways including diathermy, massage and, chief in importance, passive movements. Even when the roentgen rays showed actual ankylosis, the results realized were most gratifying. In 8 per cent. of the cases of arthritis deformans it had developed before the age of 40; in 37 per cent. before 50 and in 68 per cent. before 60, hence it should not be called a senile disease. In nearly 90 per cent. it was bilateral. The first sign was always that extreme movements of the joints caused pain. The passive movements in treatment should be vigorous even to the point of inducing brief pain. He gives salicylates at the same time. In treating the shoulder, passive movements are of paramount importance. A very useful form is to have the patient hang by his hands; this exercise can be kept up at home. Contracture of the knee can be mastered in the same way with heat, massage and passive movements carried even to the point of inducing transient pain. When the roentgen rays show an extensive deformative process in the knee we may succeed in improving one or more symptoms but not all. Treatment with small bags of sand aids materially in overcoming the contracture.

**Pains in the Back.**—Lindstedt has long been arguing that sciatica is the response of the sciatic nerve to irritation or strain, usually from some upset in the static balance of the body or overexertion. His array of arguments to prove that sciatica is the response of the sciatic nerve to irritation or or reflex action was summarized in THE JOURNAL, March 26, 1921, p. 903. He here reasons the same for lumbago and similar pains in the back, and tabulates data from 1,578 cases which apparently sustain this view of their neuralgic nature. The subjects were young recruits, and in fourteen there was pronounced sciatica besides, including four with both sciatica and lumbago. In all his cases the pain in the back was almost invariably on the same side as the muscular overstrain or static anomaly. A constitutional predisposition to neuralgia is generally evident, or some acquired predisposing factor such as infection, intoxication, worry, meteorologic influences or the like. Sciatica, lumbago and other so-called muscular rheumatism pains thus all belong to the class of equivalent neuralgic pathologic conditions. The article is in German with a three-page summary in English.

**Spontaneous Variations in Wassermann Reaction.**—Thaysen applied the Wassermann test repeatedly to sixty-six persons during the course of a year or more. All had been under prolonged observation for many years; syphilis was known in twenty-three. The conditions and the technic were scrupulously alike in all the tests, and yet the reactions showed a wide range from negative to positive or dubious, with fluctuations from time to time. The closest analysis failed to reveal any causes for the variations in the responses. The article is in English, and he states that Craig's communication in THE JOURNAL, March 10, 1917, p. 773, is the only report of similar research which he has been able to find in the literature.

**Abdominal Reflexes in Diagnosis.**—Söderbergh states that in his 26 cases of multiple sclerosis the abdominal reflexes were completely abolished in 10, and they were all present in 2. In the other 14 the abdominal reflexes were found variable at different times. The course of the disease might be estimated from the changes in these reflexes.

**Glycosuria and Diabetes in Exophthalmic Goiter.**—Holst declares that the relationship between the thyroid gland and the pancreas explains the glycosuria sometimes noted in exophthalmic goiter. The pancreas is evidently responsible for the severer forms of glycosuria under these conditions. He reports 8 cases of exophthalmic goiter with not only alimentary but spontaneous glycosuria, including 3 which must be considered as a combination of exophthalmic goiter and true diabetes, the symptoms becoming aggravated or attenuated in each to correspond. In 9 cases of exophthalmic goiter on record the pancreas was found pathologic. From these and other data cited he draws the practical conclusion that tests for sugar should always be applied as a routine measure in cases of hyperthyroidism, and that diabetics should always be examined for hyperthyroidism symptoms. If sugar is found in a case of exophthalmic goiter, the patient should be put on a strict antidiabetes diet. On the other hand, if symptoms of hyperthyroidism are found in a diabetic, we must consider the possible benefit from reducing the size of the thyroid, thus doing away with part of the factors responsible for the clinical picture. The depressing effect of the roentgen rays on the thyroid might be utilized. The inhibiting action on the pancreas, normally exerted by the thyroid, becomes excessive when the thyroid is functioning to excess; reducing thyroid function will release the pancreas from this pathologic influence, and reduce the requirement of calories. Diabetes thus steps into line as a surgical affection, he says, while exophthalmic goiter joins the list of metabolic disturbances amenable to diet. The details of 20 cases of combined hyperthyroidism and sugar intolerance are given, with the necropsy findings in some.